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Lake County Tuberculosis Sanatorium

By Hal Pereira*

IN physical appearance the new Lake County Tuberculosis Sanatorium at Waukegan, Ill., gives two impressions that conflict strongly with normal ideas about public health institutions. Its rolling wooded site and carefully studied landscaping are those of a rich country club; and the architecture of its main building creates one of the most unusual forms for a hospital structure in this country. This elegance of setting and admitted novelty of architecture, however, are merely incidental factors in the careful planning by which this institution was evolved. And it should be added that the setting and the architecture were not chosen and designed primarily to be appreciated by visitors to the grounds or by motorists on the roads which bound it but as therapeutic aids to the treatment of tuberculous patients within the building.

Modern medicine is so advanced that tuberculosis probably could be treated successfully in any kind of a building offering adequate shelter. By the same token, it would be possible to build airplanes in a church and hold religious services in an airplane factory. In each case, however, civic health, sturdy airplanes and inspired worship are achieved in the face of hardship, lack of facilities and efficiency, and in an entirely inappropriate atmosphere. Industry and religion, reflecting more personal than public interests, have long been housed in proper structures and convenient surroundings. Lagging far behind are institutions for the public welfare; and it is only in recent years that crowded ill-lighted schools, musty jails, insanitary asylums and "pest houses" are being replaced by facilities that properly reflect their importance to all of society.

It is quite proper, therefore, that Lake County's sanatorium should appear to be more than an ordinary building in a public street. It is a solution to a problem not only of acceptable architecture and adequately enclosed space, but of mechanical, psychological, social, medical and surgical necessities. How this institution was created, and these problems solved, is the story of modern hospital planning and should be of intense interest to those architects and public-minded citizens who now, or in the future, approach problems of a similar nature.

Lake County is probably the second wealthiest county in Illinois, but for many years it had no adequate or up-to-date sanatorium for the treatment of its tuberculous citizens. Many years ago, about 1914, on the site of the present County General Hospital, there was established a "fresh air" or "tent" colony for their care. This thrived for several years, but ceased to exist when the General Hospital was built. An adjunct of the new hospital was an outlying "pavilion" with a bed capacity of 26, used for tuberculous patients. But this was wholly inadequate in size and equipment, so that those who could afford it went elsewhere, and many

A nurses' residence, simple in design with no attempt at exterior embellishment, was built in conjunction with the main building.

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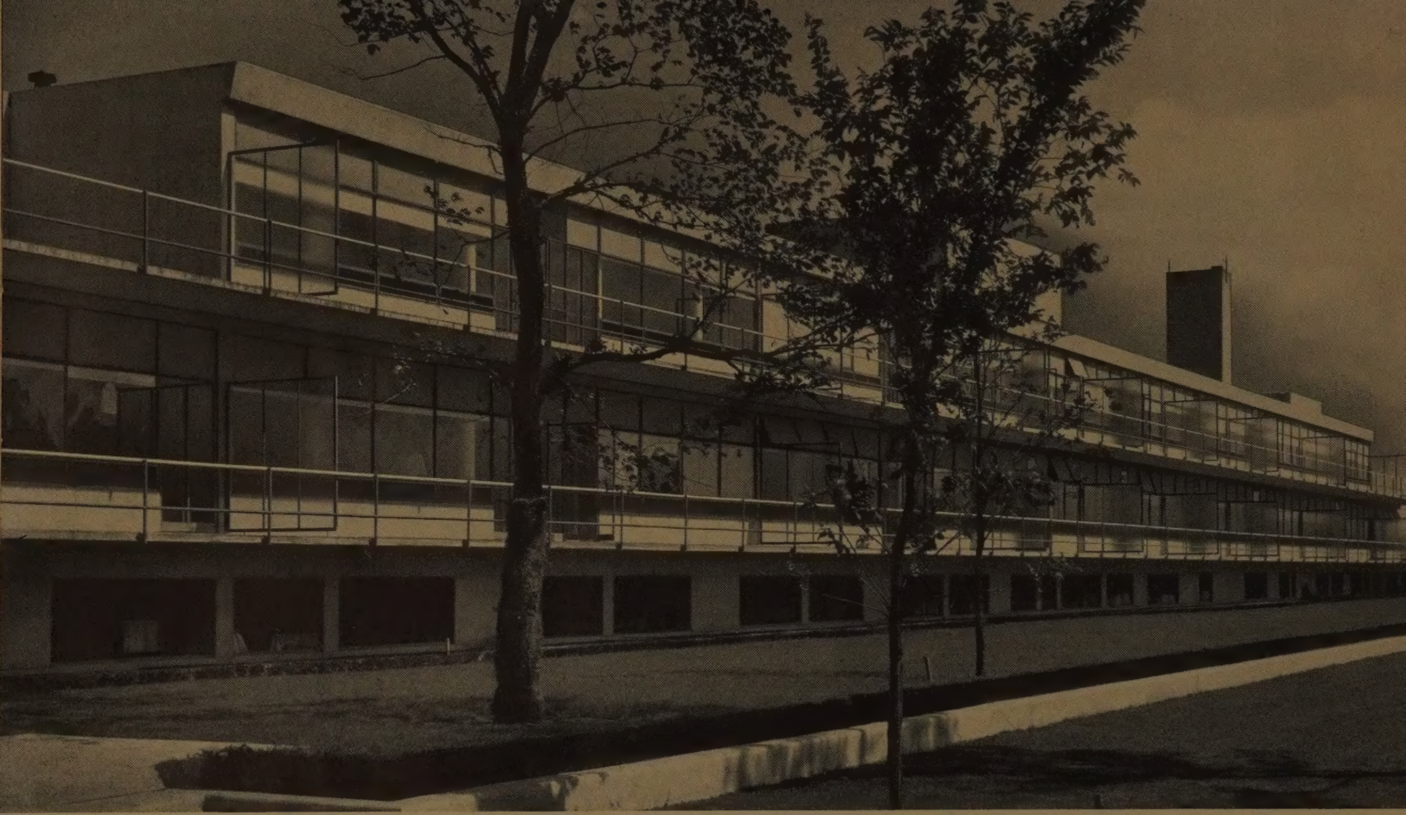
*Offices of Wm. L. Pereira, architect, Chicago.



Lake County Tuberculosis Sanatorium, Waukegan, Ill. Associated, William A. Ganster, architect, Waukegan, and Offices of William L. Pereira, architect, Chicago. R. J. Graham, structural engineer; E. R. Gritschke, mechanical engineer; Charles B. Johnson & Son, Inc., contractors—all of Chicago.

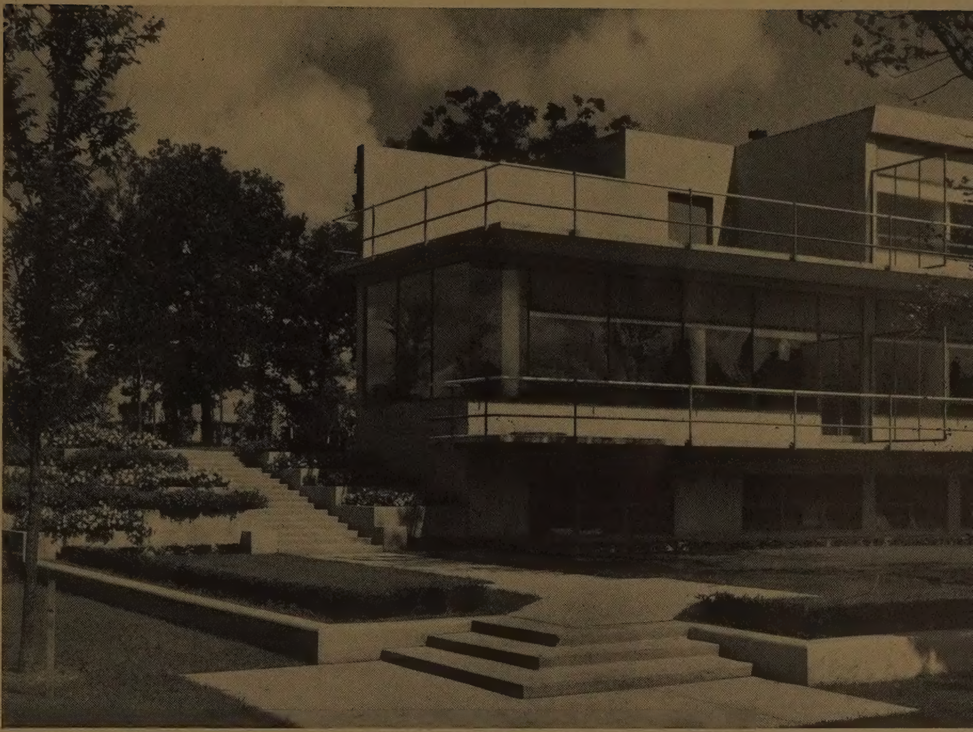
indigent patients were cared for in private sanatoriums at the expense of the county.

A few years prior to 1936 the Tuberculosis Association, a voluntary organization including many medical men, started a campaign to overcome this inadequacy. This campaign was educational, to acquaint the voters of the county with the provisions of the Glacken, or Tuberculosis Sanatorium Law, which provides that counties in Illinois may assess themselves up to 15 cents per $100 assessed valuation for the purpose of operating a sanatorium for the care of tuberculous persons. The citizens of Lake County voted for this assessment in November, 1936. The law provides that the county board shall appoint three persons, one a physician, to act as a board of directors, under whose supervision a sanatorium may be constructed and suitable care provided for patients. In 1937 the legislature passed a special bill enabling such a board, for a period of two years, to sell bonds for the purpose of erecting a sanatorium and providing that both bonds and interest be retired out of the 15 cent levy. Shortly after the law was passed, Lake County sold $240,000 in bonds, due annually in sums of $30,000 for eight years. The county also applied for a PWA grant and received $193,000.

While this work of financing was going on, the sanatorium was gradually taking shape on paper and in the minds of the board, the architects and the medical director. It was their desire to provide a tuberculosis control system which would (1) aid the voluntary and relief organizations in locating persons afflicted, (2) extend this same service to all reputable practitioners of medicine and surgery in the county and (3) provide a modern, fully equipped hospital for the complete treatment of tuberculosis.

For a community of this caliber, only an up-to-date hospital would suffice. It must be in keeping with today's architectural trends, it must supply all that today's treatment prescribes, it must be efficiently functional, and of an enduring, sound construction that is easily and economically maintained. Since the sanatorium was, by law, to be available to rich and poor alike, it must not be just ordinary, but have an appeal to those accustomed to the better things (who, in fortunate Lake County, comprise a sizable percentage of the population). Since part of the treatment is rehabilitation, some provision for that must be made.

Accordingly, a compact unit was planned with patients' accommodations, laboratories, therapy room, library and offices on the first floor. On the second floor were placed patients' rooms of single, two and four-bed size, a surgical suite, pneumothorax and fluoroscopic rooms. In the basement is storage space, vault and morgue, with a power plant in the subbasement. In selecting the site, a piece of property was found at the edge of Waukegan, population center of the county, which provided country air in high,



Reflections of clouds and trees in the wide window areas bespeak the warmth within—warmth heightened by interior colors of yellow, red, brown, blue, green, which tend to prevent institutional monotony.

scenic surroundings, free from crowding. An additional advantage was that city utilities and sewerage facilities were available.

The main building of the plant is a long (350 ft.) concrete structure of simple, functional design. Along the south exposure are located 80 of the 92 patients' beds in two and four-bed rooms with fully glazed fronts opening onto continuous cantilevered concrete balconies at first and second-story levels. Aside from a constant view of beautifully wooded, rolling grounds, the balconies provide for sun and air bathing.

Since the annual reported deaths from tuberculosis in Lake County had been averaging around 38 for several years, this was taken as a basis for calculating approximate bed needs. One bed in a community is required for each tuberculosis death in order to isolate these advanced cases. Two beds per annual death permit the treatment of some of the early cases as well, while two and one-half to three beds per death provide still more treatment and greater good for a greater number.

Full glazed fronts open onto continuous cantilevered balconies at first and second-floor levels.

A nurses' residence was built in conjunction with the hospital, and the home of the superintendent is also on the grounds. Heating plant, kitchen, laundry and surgical units were all planned to be of sufficient size to permit increasing the capacity of the institution by another 50 to 75 beds without making additions to these units.

Concrete was selected for the hospital and the nurses' home because this material was the only one which could adequately produce the structure required by the form of the building. The concrete walls, which are plain and broken only by large continuous areas of windows, were formed against plywood and finished by thorough cleaning. The floors of the hospital are reinforced concrete, cantilevered along the south exposure to form the continuous balconies. Thus a strictly functional form and a modern mass material have combined to produce an interesting and unusual effect with no attempt to enrich the exterior.

Hedrick-Blessing Studio

Main hallways and stairs are spacious and well lighted.

The exterior walls were all insulated with ½-in. insulating material over which plaster was applied. Ceilings in corridors are acoustically treated and the lighting is soft and pleasant. Colors used throughout the building tend to prevent institutional monotony: yellows, blues, greens, browns and reds—at each turn a different color meets the eye.

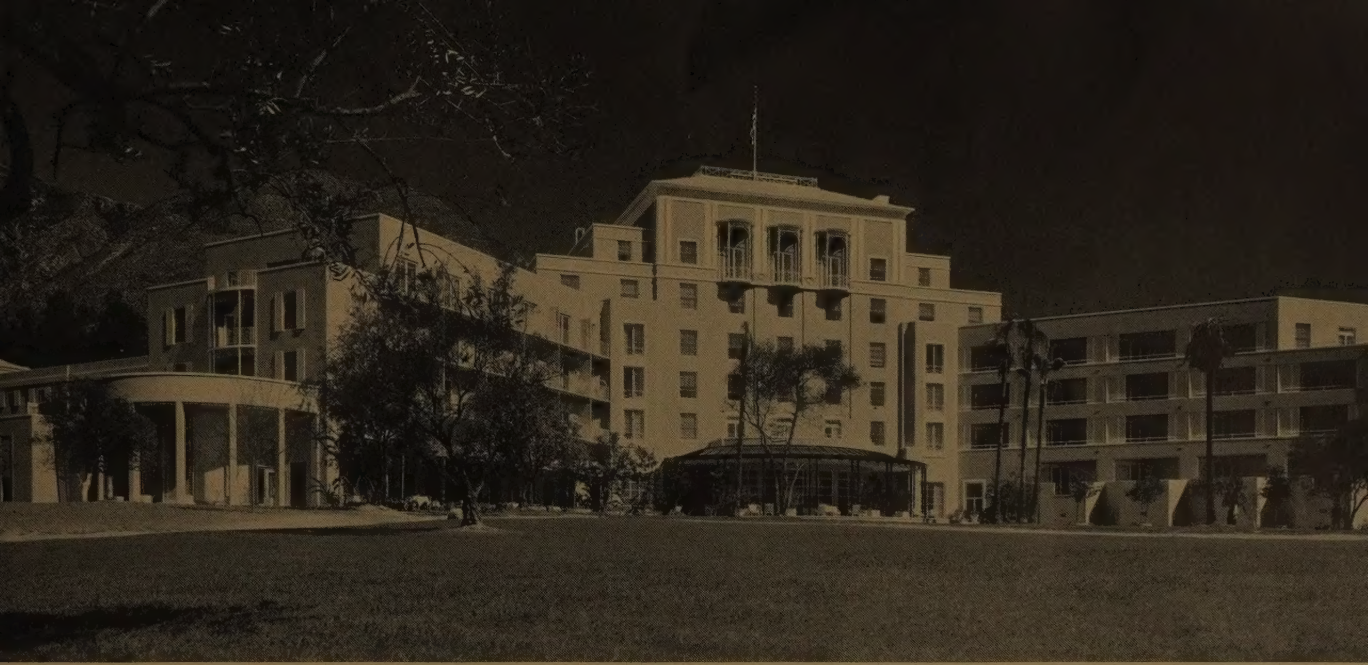
The Sanatorium was planned, erected and equipped for operation in 20 months, 12 of which were devoted to constructing and finishing the buildings. According to Dr. Charles K. Petter, medical director and superintendent, the plant is operating as efficiently as was anticipated during the months of planning.

"We have been able to fulfill," said Dr. Petter at the conclusion of the first year of operation in September, 1940, "all of the original purposes except eradication of the disease—a long-term objective, toward which we believe the efficiency of the building itself will contribute significantly.

"We are treating patients afflicted with many types of tuberculosis. To properly carry out this work, contentment of the patient is a paramount necessity. Hence visiting hours, good books, entertainments, and radio programs (the latter provided by a hookup throughout the building) lighten long periods of resting in bed. Artificial sun baths are provided for those needing them in cold weather, and during spring and summer natural sun treatments as prescribed by physicians are possible on our long balconies. All in all, it must be said that our new Lake County Tuberculosis Sanatorium, planned to give tuberculous individuals the best treatment possible, is doing just that. From the architectural, mechanical, psychological, social, medical and surgical standpoints, this sanatorium is working as well and efficiently as we had ever hoped."

An analysis of the costs of this building, in relation to the completeness of the equipment and space provided, indicates that it is one of the most economically constructed hospitals in Illinois. Careful planning, based on modern requirements, and the use of modern materials and construction techniques, can produce more and more economically the public health facilities so necessary everywhere.

A strictly functional form and a modern mass material have combined to produce an interesting and unusual effect without any attempt being made to enrich the exterior.



High in the mountains two hours from Los Angeles lies Arrowhead Springs Hotel, a health and rest resort for the weary traveler. Gordon B. Kaufmann, F.A.I.A., and Paul R. Williams were the associated architects; Holmes & Narver, the structural and mechanical engineers; and William Simpson Construction Co., the contractor—all of Los Angeles.

Arrowhead Springs Hotel

BY GORDON B. KAUFMANN*, F.A.I.A.

TWO hours from Los Angeles, in the mountains above San Bernardino Valley, lies Arrowhead Springs Hotel, seat of an extraordinary variety of life. Combining all the advantages of the health-giving natural mineral hot springs for which the region has been famous since Indian days with a luxurious hotel having accommodations for sports from swimming to skiing, it is truly a traveler's paradise.

The main hotel, recently built of architectural concrete, comprises 150 guest rooms, a theater, dining rooms and fashionable shops. At least half of the bedrooms open on private balconies, so arranged that they do not overlook one another.

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*Los Angeles, Calif.

Exterior of the building is an adaptation of the Regency period.

Exposed concrete was painted a warm grey; moldings were painted white.

In design the exterior of the building is an adaptation of the Regency period, carried out in exposed concrete painted a warm grey, relieved by architectural ironwork and moldings painted white. An elaborate cure house located at the bottom of a narrow canyon, about 80 ft. below the hotel, contains an amazing series of natural steam caves carved into the heart of the mountain. These caves, together with the lobby, dressing rooms, solarium and connecting corridor, are all housed in a concrete structure faced with natural rock.

Six hundred feet from the hotel is the swimming pool and recreation center, the pool surfaced with terrazzo, its curving contours accented by palm trees at each side.

Geologic investigation disclosed that just north of the hotel site is a fault in the underlying rock structure. Above the rock there is a considerable depth of surface deposit of decomposed granite and granite boulders that shows no signs of having been disturbed. The building was founded on the decomposed granite, care being taken that it rested above one rock block.

Later, excavation disclosed hot water springs along the fault line, and seepage from these springs into the northerly portion of the cure house was the only water encountered in excavating for the building. Field drains were laid under the cure house basement floor and led to the rim of the canyon to permanently take care of this seepage.

The concrete footings of a portion of the cure house were carried approximately 50 ft. below ground surface. This is where the building overhangs the canyon and where an elevator shaft connects with a tunnel leading to the steam caves. A trying condition was found in excavating for these footings, the elevator shaft and tunnel, for the earth temperature at that depth was 120 deg. F. Twenty minutes was as long as men could work in this atmosphere. As soon as the tunnel and elevator shaft were holed through, natural ventilation was sufficient to bring the temperature down to a comfortable point. Concrete aggregates produced near San Bernardino were found to be excellent. Care was taken to establish a dense workable mix, and this mix was used throughout the job. Footings were placed directly from a portable mixer into the forms, moving the mixer along the banks by convenient steps. After the footings were placed, a central mixing plant was established at the center and on the north side of the building. The mixer discharged into a hoisting skip which emptied into a hopper above the level being worked. Pneumatic tired buggies were used to distribute the concrete. Hand rodding, together with tapping the sides of the forms, was used in placing the concrete. An unusually small amount of patching was necessary when the forms were removed.

All outside plain surfaces of the building were formed with ⅝-in. plywood. There was a small amount of plaster mold work used at entrances and cornice.

Comparative preliminary designs showed that two-way reinforced solid slabs supported by beams on column centers, was the most economical construction. The floor slabs were designed continuous with the 8-in. thick reinforced concrete exterior walls. Panel sizes varied throughout the building but were in the order of 13 ft. 6 in. by 16 ft. 6 in. Most of the floor slab panels were 4¾ in. thick.

Beams supporting the floor slabs were located on partition lines in practically all cases so that the ceilings of rooms were left free of structural members. Plaster was applied directly to the underside of the floor slab. The beams were designed to net lumber sizes in the interest of form economy.

All walls above grade were made 8 in. thick and reinforced with two curtains of steel. There is considerable daily change of temperature in this area, and for this reason two-thirds of the total wall reinforcement was placed in the curtain near the exterior surface.

The building was designed according to the principles of continuity. This led to a problem in the second floor where some rather heavily loaded long span girders were continuous with short span beams that necessarily had to be shallow. The problem of excessive negative moment was avoided by leaving out a small section in the center of the shallow beams until the structure of the building was completed. The missing part was then filled in after the girder had received practically its full dead load.

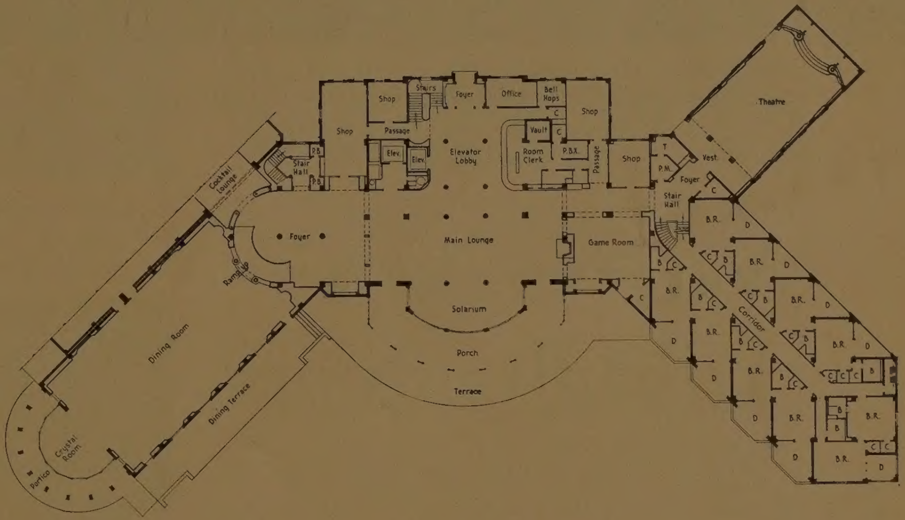
The building was designed to resist a static force equal to .08 gravity acceleration acting on the mass of the building. Due to the considerable wall area of the building this caused no difficulty and very little additional cost. It was necessary to add some reinforcement to floor slabs where they were weakened by stairs and other openings and to a few walls where shear forces were high.

The sloping concrete roof is covered with a membrane roofing which in turn is covered with a portland cement insulating material weighing but 30 lb. per cu.ft. The insulation was cast in place in strips 3½ in. thick running around the roof. A shingle-like effect is produced showing 1½-in. butt and 18 in. to the weather. A white paint coat was applied over the insulation as a final finish.

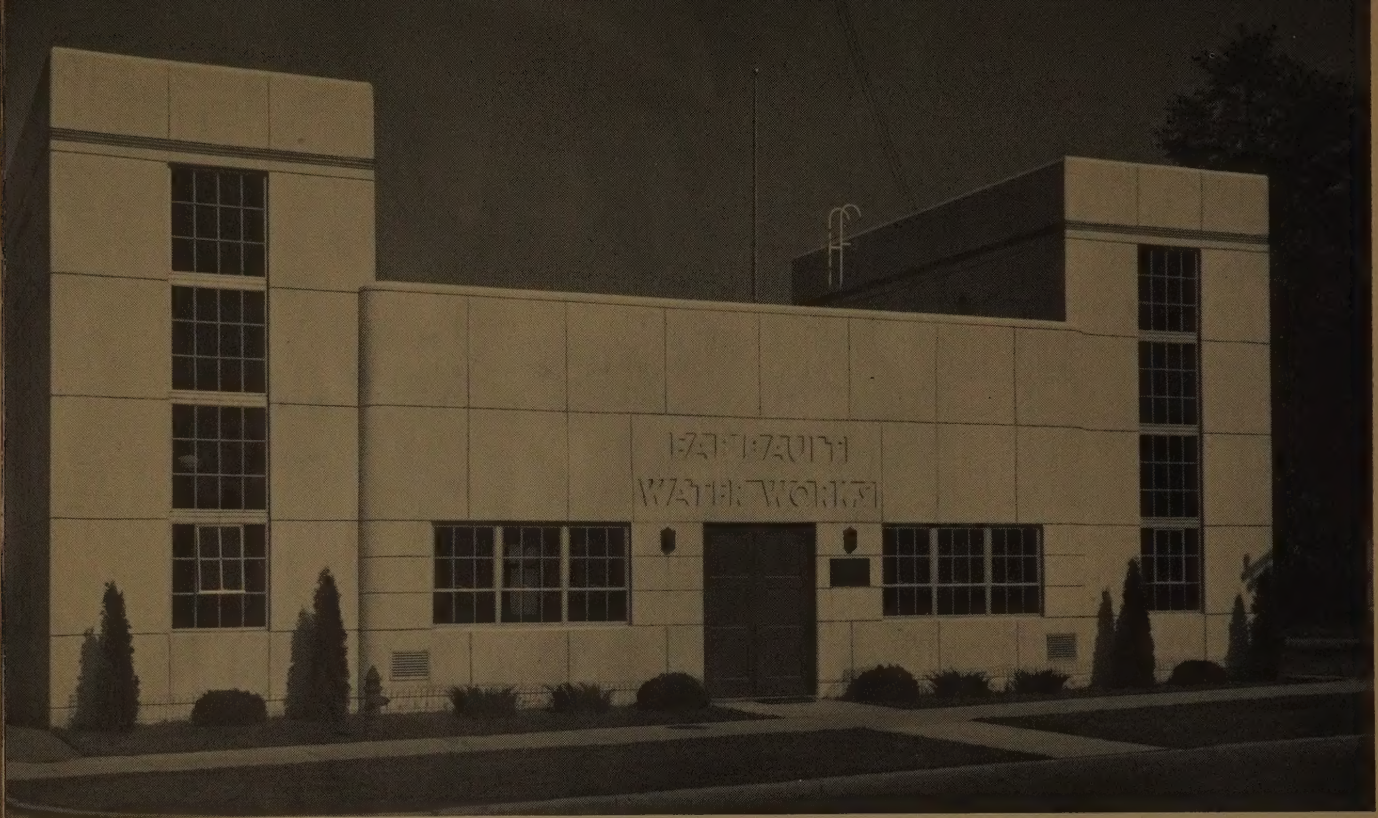
Water supply for the project comes from Strawberry Creek and is stored in a two-compartment 350,000-gal. underground reservoir. The reservoir is of reinforced concrete with a flat slab design roof having four-way reinforcement. Adjacent to the reservoir is a reinforced concrete filter and valve room, also below ground, with a door opening on the side of the hill. An additional two-compartment reservoir of similar construction having 750,000-gal. capacity has been designed for future construction.

The natural hot mineral waters, for which the resort is famed, are collected in a reinforced concrete tank about 200 ft. north of the hotel. The water from these springs is approximately 160 deg. F. This hot water is piped to the hotel for therapeutic purposes.

High concrete walls enclose the recreation center.



The swimming pool is surfaced with terrazzo. Its curving contours are accented by palm trees.



Faribault waterworks was constructed at no more cost than would be required to build an ordinary shop structure. Designed by Long & Thorshov, Inc., architects, it was built by C. G. Victorson & Co., all of Minneapolis, Minn.

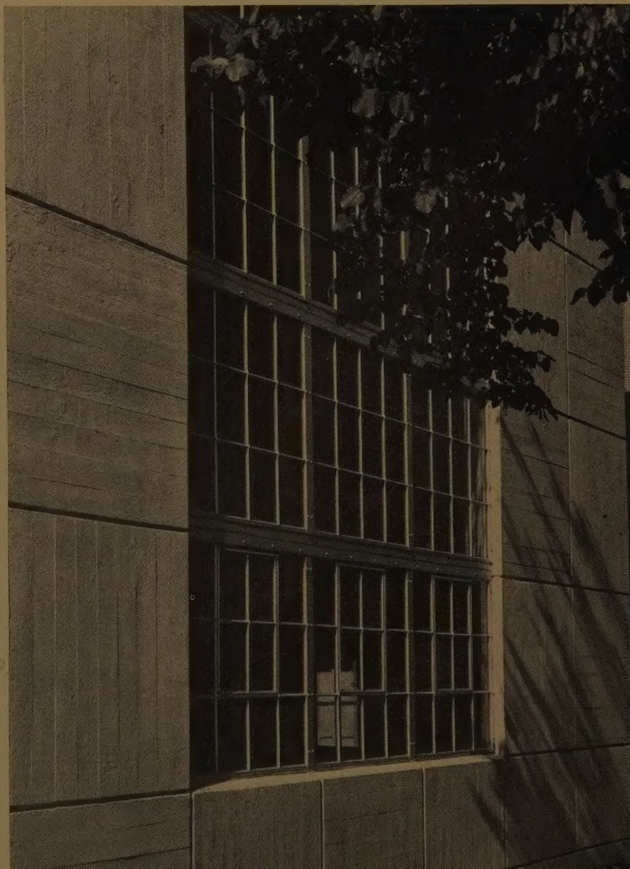
Waterworks at Faribault, Minn.

By W. W. Tyrie*

SINCE the completion of the waterworks building at Faribault, Minn., in 1938, there has been an unusual amount of pleasant comment about the building. Most of this has come from people who probably never realized that so utilitarian a structure as a waterworks should or could have interesting appearance. It must be admitted at once, however, that whatever architectural merit this building has, was achieved at no more cost than would be required for an ordinary shop structure. In fact, some of the most interesting design effects were the result of planning for rigid economy.

The high ends of the building were no aesthetic inspiration. They are strictly essential to the operation of the plant.

Texture was produced by using horizontal and vertical form boards in alternate square panels, producing a constantly changing play of light and shadow.



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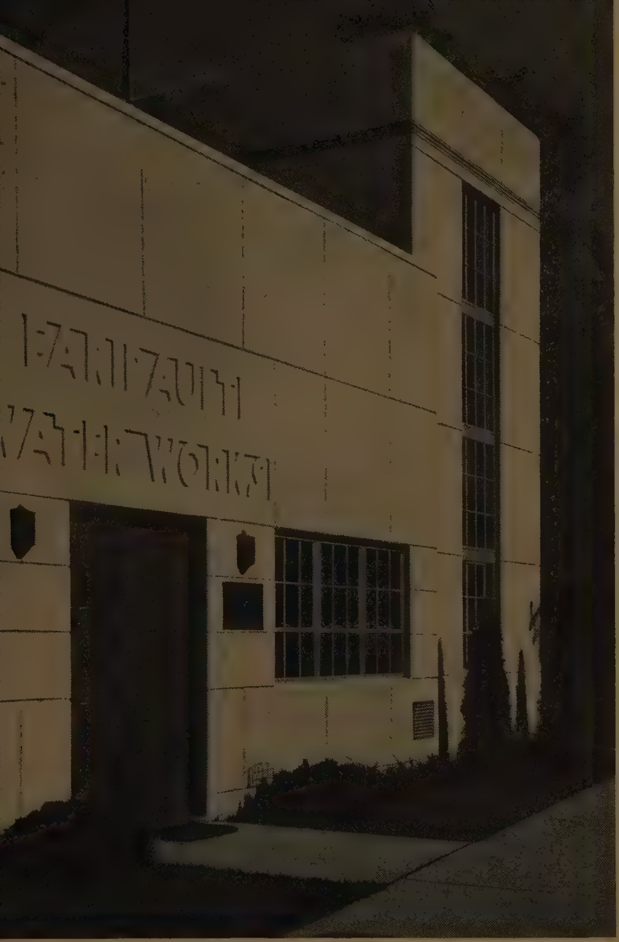
*Member, Long & Thorshov, Inc., architects, Minneapolis, Minn.



All exterior walls were finished with white portland cement paint.

Before the building was started, two wells were drilled, one pump and all necessary piping were installed. The functional arrangement of this equipment determined the design of the building, for both wells center under the high sections of the structure, the height permitting withdrawal of well casings through scuttles in the roof over the pumps. This high space was not required for any other equipment, and for this reason the center portion of the building is lower. The result is minimum cubage, minimum total cos and interesting elevation.

Erected in front of an old building used for pumping an storage, the structure is 32x67 ft., with the end section rising to 36 ft. in height. It is entirely concrete.

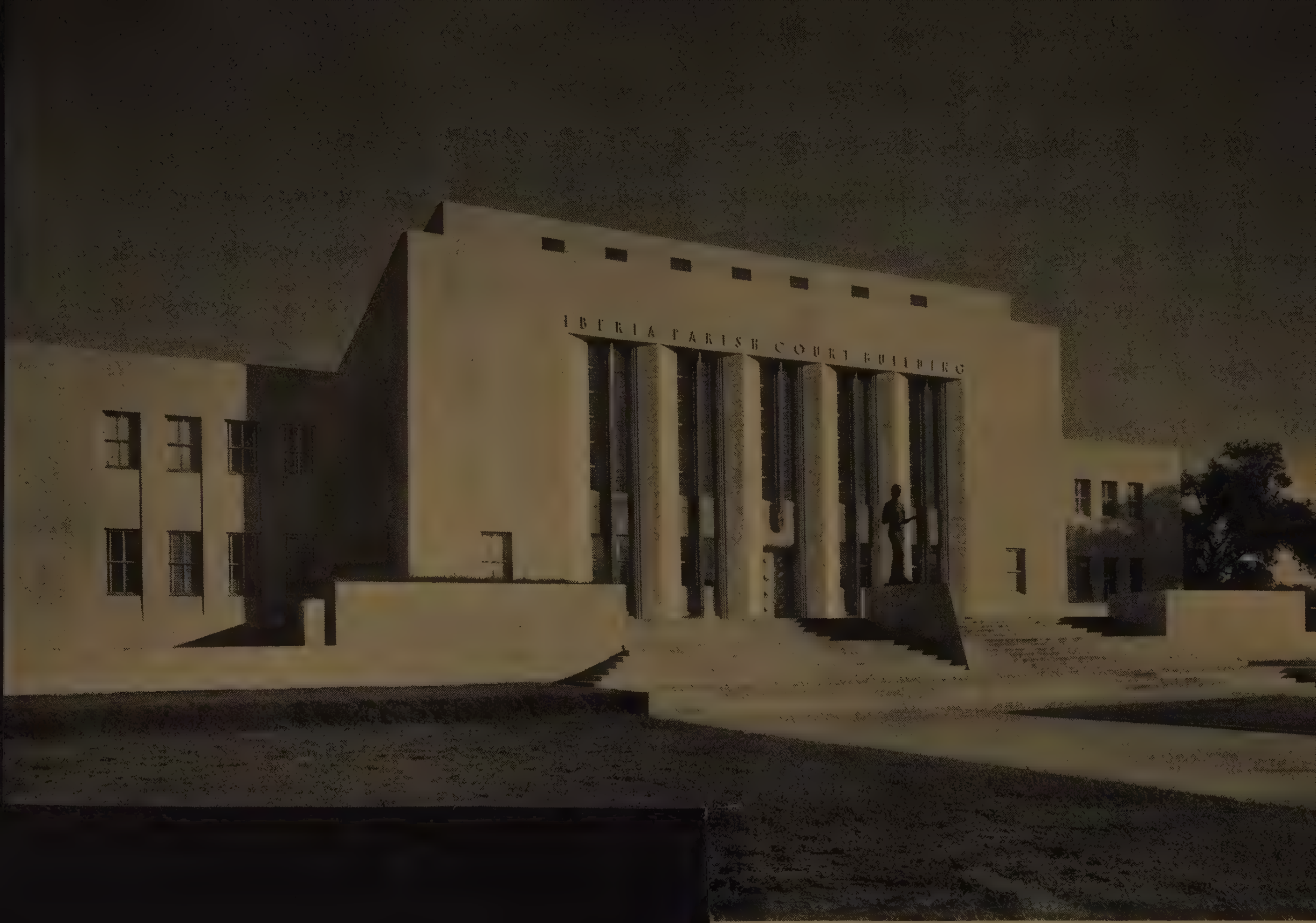
The most interesting architectural feature of the buildin is the texture of the exterior concrete walls. This textur was made by dividing the forms into squares, using vertic and horizontal form boards in alternate panels. The square are separated by narrow rustications. This simple metho of forming produces a constantly changing play of light an shadow, depending upon the slant of the sun. Although required careful arrangement of the squares in preparin the design, the additional interest given to the walls entirely worth the added effort.

Architectural concrete presents possibilities, particularly in the creation of textures, that many designers have thus far failed to explore. The criticism sometimes voiced that concrete permits only monotone exteriors will be found to have little basis in fact when texture is seriously studied. It is gratifying that execution of these textures in concrete does not add materially to the cost of the building.

The exterior walls of the waterworks were finished with two coats of white portland cement paint. Interior walls have a tile wainscot 7 ft. high, with the plastered walls above painted. All doors and frames are metal. There is no chimney, no fuel, ash or boiler room, and no radiator or piping on floors or walls. Heating is by three gas units automatically controlled. This fact and the economy of architectural concrete explain why the building, except for pumping equipment and fees, cost but $15,380.

I. E. Wilson is water commissioner of Faribault and Frank W. McKellip is city engineer. The friendly cooperation of all concerned with the planning and operation of the building is largely responsible for the pleasing results.

High ends of the building were required to permit pulling of well casings through scuttles in the roof over the pumps. Since the central portion did not need height, minimum cubage was achieved.



arish Courthouse in the Teche country of Louisiana. A. Hays Town,
s the engineer. Gravier & Harper, Lake Charles, were the contractors.

Parish, Louisiana

ARCHITECT*

isions, I believe it deserves whatever favorable comment
may be able to make about it. This feeling comes now
om my satisfaction over results obtained in the construc-
on of Iberia Parish Courthouse at New Iberia in the
eche country of Louisiana.

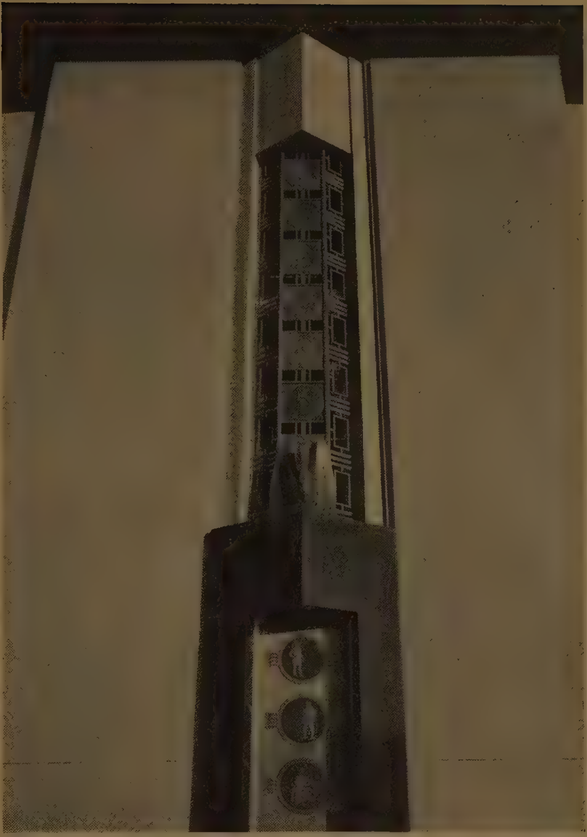
An empty-handed Justice with clear, seeing eyes, cast
bronze before this new courthouse, symbolizes a sweeping
eparture from architectural tradition in this old country

of old laws and old traditions. For this new building is modern in all but purpose, and this purpose is probably stepped up to modern tempo by permitting Justice to pass more swiftly through spacious, clean and comfortable halls.

Yet the building is not altogether modern in design. Its form is definitely classical. The details are not classical at all. What other material gives the facility to break conventions so delicately that old forms and new details can be blended appropriately? I think this can be done well only with a material that owes nothing yet to tradition and which can assume forms and shapes not limited by what a man can lift and fit into place.

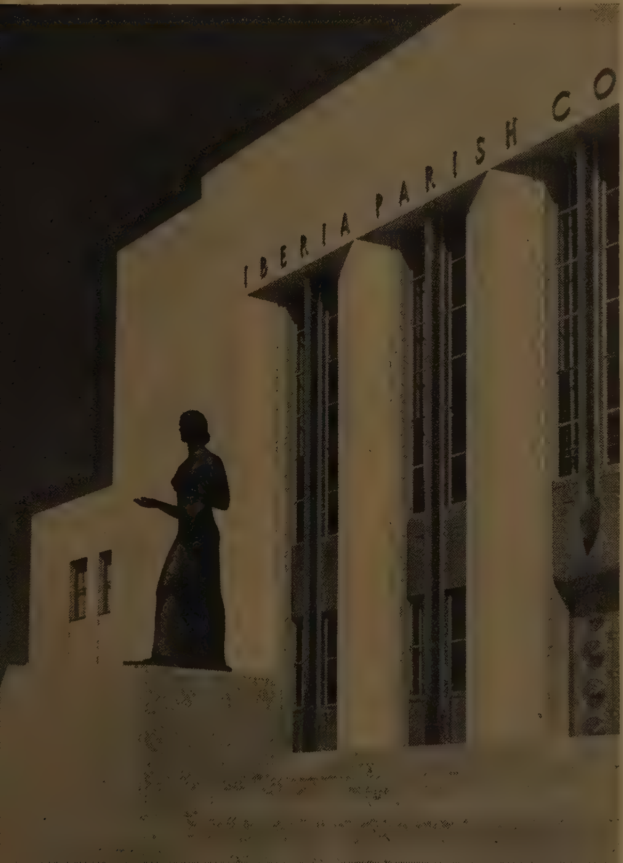
When designing in concrete it is not necessary to think in units. One can consider a wall from the top to the bottom, as well as from bottom to top, for this material is not piled up from the ground but molded whole in space. It is the whole, large vision that ends in a concrete design, and not a gathering together of many parts, for this material is structurally and architecturally continuous. The designer knows that his limitations are few and are mostly within himself.

The Iberia courthouse is a compact arrangement of parish offices, courtroom, jail and other offices for farm bureau and federal agencies. It is two stories high, with first floor level raised to permit natural illumination throughout the basement.



One concession to tradition is this tall, thin metal grille which depicts the different peoples and governments that have lived in and ruled over Louisiana.

empty-handed Justice, cast in bronze, symbolizes the departure from hitectural tradition in a country where laws and traditions are old.



Structurally the building is a rigid frame of reinforced concrete with filler walls of concrete. However, instead of building a frame and filling the walls as in traditional construction, the walls, frame and floors were cast together on the way up to the coping. The walls, formed against 5/8-in. Douglas fir plywood, are 8 in. and 12 in. thick, the thickness determined by the reveals and simply molded details in the walls. Floors throughout are pan-joist construction, finished with terrazzo in areas used by the public, and topped with asphaltic tile elsewhere.

The exterior walls are rather plain in that little ornamental work is used. They are given the appearance of additional strength by battering the corners and by exposing outside columns boldly. These walls were rubbed thoroughly to a smooth, almost white finish, and to this white mass of balanced forms were added the only strictly decorative features of the building—the aluminum spandrels, the metal letters, the aluminum set doors with stainless steel discs with natural bronze designs. These details are

Exterior walls are quite plain and were given an appearance of additional strength by battering the corners.

modern in conception and intentionally decorative. The majority of this metal work is confined to the main facade which faces east. On the west facade there is a tall, narrow metal grille above the rear entrance, which depicts the different peoples and governments that have lived in and ruled over Louisiana. This is a concession to tradition, but not in design.

On either side of the building are formal fountains built up of metal lath forms and cement plaster. These fountains complement the classical form of the building and are the terminals of a wide promenade entirely across the front of the building, which rises to form a porch before the many columns of the entrance. The heroic statue of the bright new Justice is at the center of the entrance steps. The statue was the work of Jules Struppek.

Inside the building the most important decorative feature is a large mural in the courtroom executed by Conrad Abrezio.

Construction was started in February of 1939 and was carried on throughout the summer, great care being taken during the hot months that the concrete be properly cured under wet burlap blankets. The work of erecting the forms was excellent. In some cases much greater lifts of concrete than are usually advised were formed without difficulty. This was due to the contractors' great devotion to this job and their courage in using concrete for all that it is worth.

The courthouse was opened early in 1940, and to the people of the parish and others from many miles around it was something very new, and large and interesting against their quiet, moss-hung countryside. While they all commented that it was different, none said that it was improper, and that it did not please them—and they did not complain that the cost was $360,000.

The wide promenade across the front of the building terminates in formal fountains.

School for Effingham, Illinois

By Joseph W. Royer*

When plans were being formulated for a new high school building for Effingham, Ill., there was comparatively little architectural concrete in this region; and there were rumors that exposed concrete was not feasible in this climate. These rumors seemed to us to be unfounded, however, because of the widespread, satisfactory use of concrete for other purposes. Moreover, the material seemed to offer interesting possibilities, both in design and in economy. It was worth investigating carefully.

There are innumerable concrete bridges in Illinois and a new architectural concrete school at Joliet. Many of the bridges and the Joliet school were visited and found to be in fine condition. An investigation of costs promised economies that should not be neglected, providing concrete would produce the kind of building desired. The results of our investigation pointed favorably to concrete for the new school, so we proceeded with the drawings for an architectural design realizing that we would have to construct such a building to determine the answers to all the questions in our minds.

Now that Effingham School is completed, we are very happy over our choice of material. The town itself, suddenly growing in population due to nearby oil production, is proud of the building. School opened in September, 1940, with the largest enrollment and the first really adequate educational plant in the history of the town.

All convictions based on our investigation were confirmed by construction of the building. To make certain about cost we prepared alternate designs for concrete and for brick masonry. When bids were submitted, concrete was found to have saved at least $2,700 over the best alternate.

Planning the building and observing it grow to completion demonstrated several important advantages of concrete. Many architects have said it is easier to design in

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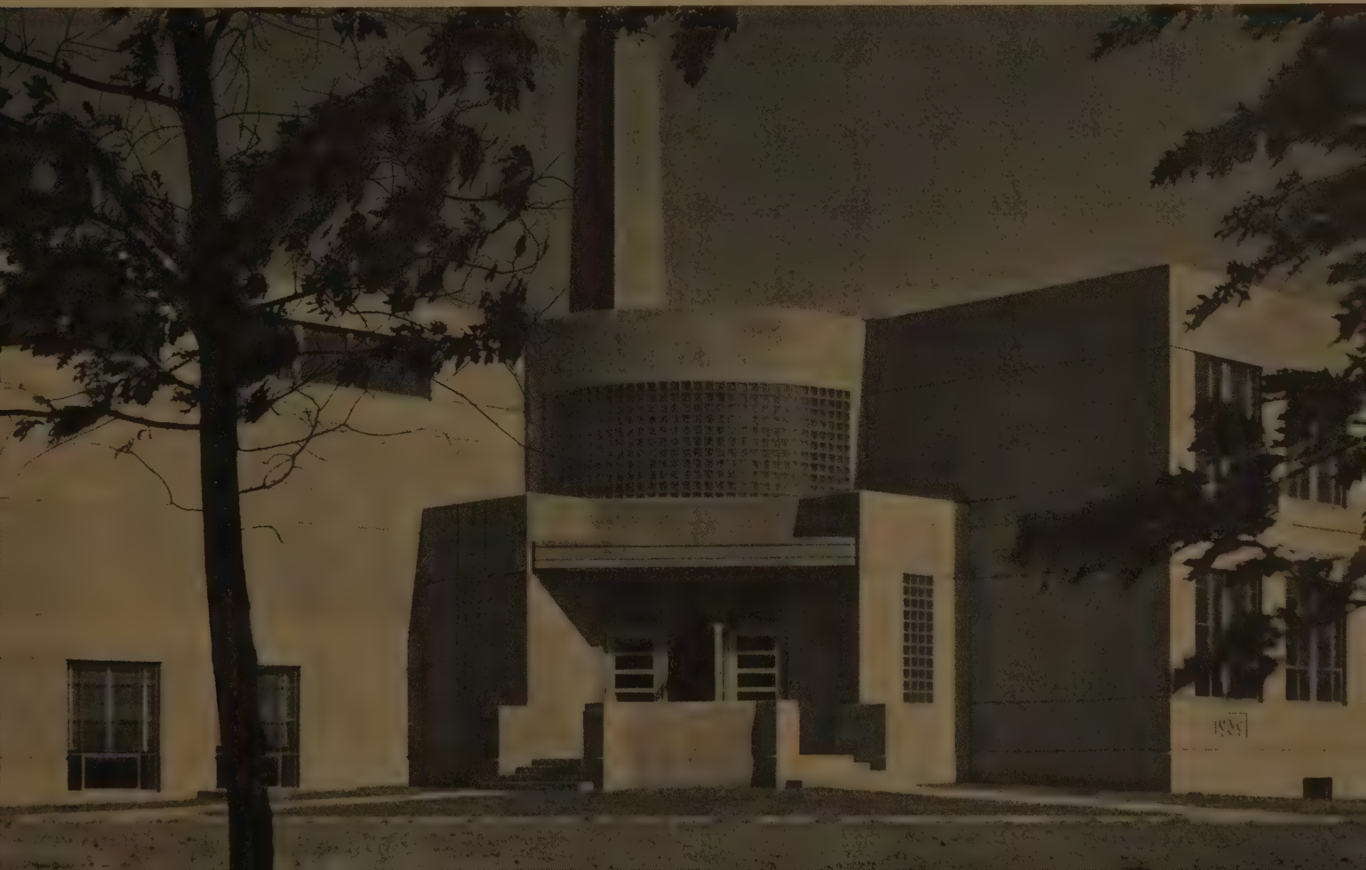
*Senior member, Royer & Davis, associate architects, Urbana, Ill.

Opened in September, 1940, this architectural concrete school at Effingham, Ill., is "the first really adequate educational plant in the history of the town". Royer & Davis, of Urbana, Ill., were the architects. E. C. Childers Construction Co., of Kansas City was the contractor.



Classroom wing is separated from a combined gymnasium-auditorium by expansion joints running through the building.

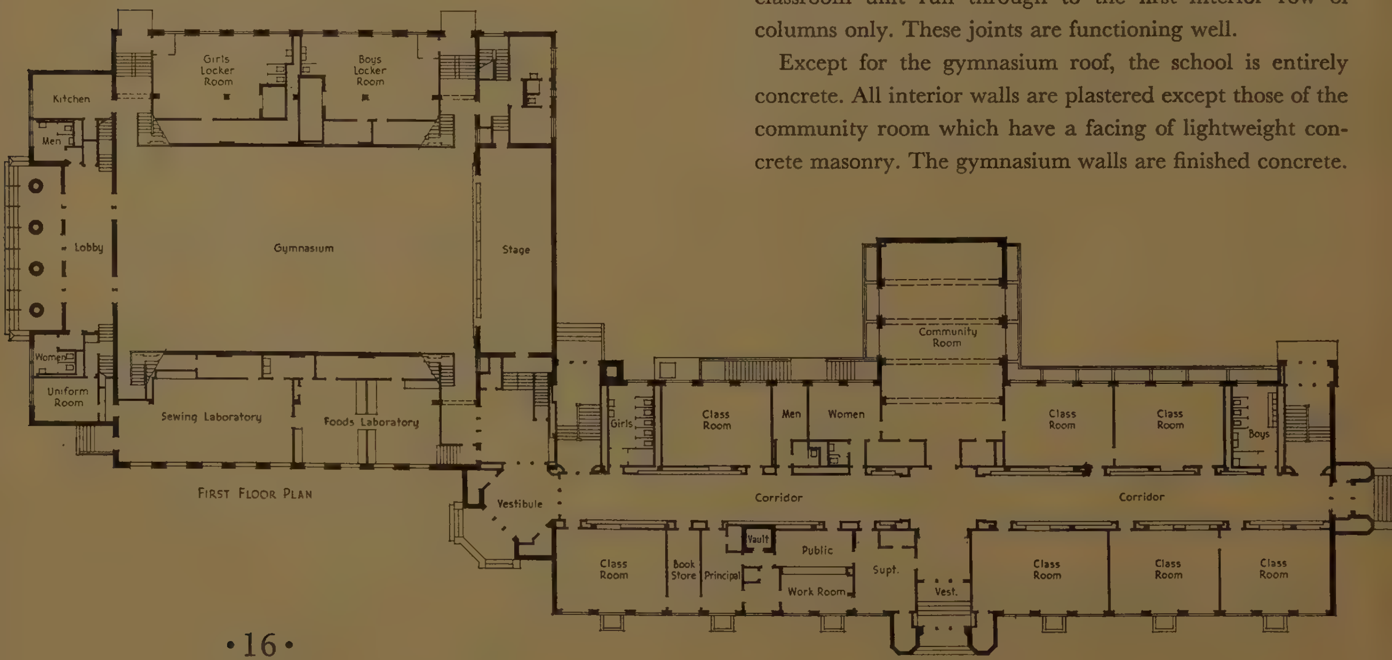
concrete than in other materials because it is the most flexible of all building materials. I believe, however, that we can make this statement even more pointed.

With concrete the designer is not restricted to narrow openings because the material of which the lintels are constructed is a part of the wall itself, and all that is needed is additional reinforcement to give proper structural strength. With concrete the designer is not restricted to masonry unit dimensions. One large worry eliminated by concrete construction is the problem of designing trim around copings and openings. Where ornamentation is desired it is handled simply by adding interesting molded detail to the structural wall itself.

Effingham High School is designed for simplicity and utility. The greatest use for the least cost was the aim, and we think we got a lot of building for the money, both inside and out.

The building consists of a long rectangular unit devoted to classrooms and a combined gymnasium-auditorium unit. Expansion joints run through the building where the two units join. The gymnasium is set back from the front line of the classroom unit. In the corner formed by this setback is an entranceway serving both the gymnasium and the classroom units. Each unit, however, has its own main entrance, that of the gymnasium fronting on a side street. Expansion joints on both sides of the main entrance of classroom unit run through to the first interior row of columns only. These joints are functioning well.

Except for the gymnasium roof, the school is entirely concrete. All interior walls are plastered except those of the community room which have a facing of lightweight concrete masonry. The gymnasium walls are finished concrete.



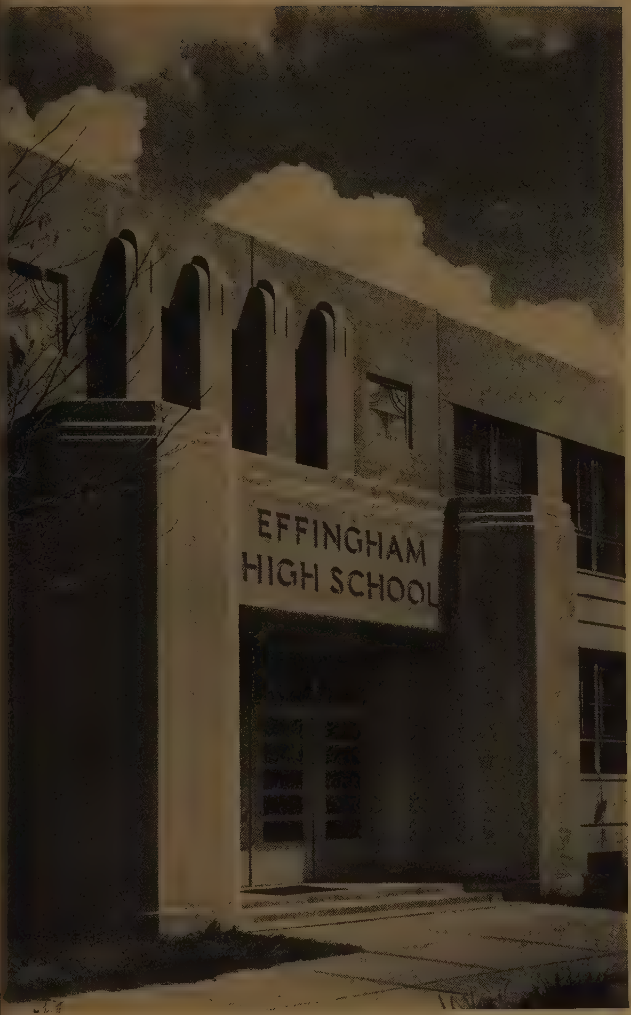
FIRST FLOOR PLAN

Forms for the exterior walls were plywood which produced smooth surfaces. A general cleaning down after the walls were erected was the only finish treatment given to the wall surfaces.

Construction started on January 1, 1939. The first concrete was placed on April 1, and by September 30 all concrete was in place. This is a relatively short time for such a large quantity of concrete.

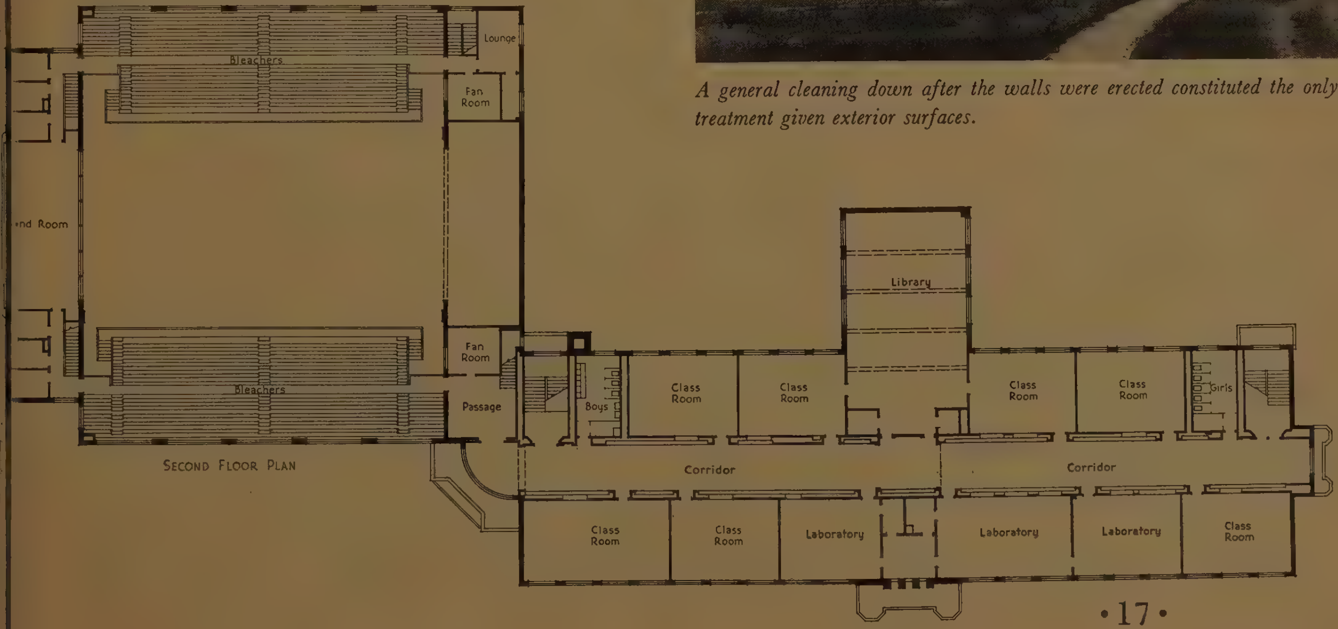
The building contains 1,025,900 cu.ft. The general contract price was $217,000. Heating and electrical contracts brought the total cost to $283,788, or a cubic foot cost of 27.6 cents.

Since designing the Effingham building we have designed another architectural concrete building—the high school, Noble, Ill. In this building we have made very few changes in construction used in Effingham School. The Noble building is a very successful and pleasing structure. Architectural concrete building design and construction technique are improving with each new building. Working with this material is one of the most interesting opportunities for architects in our time.

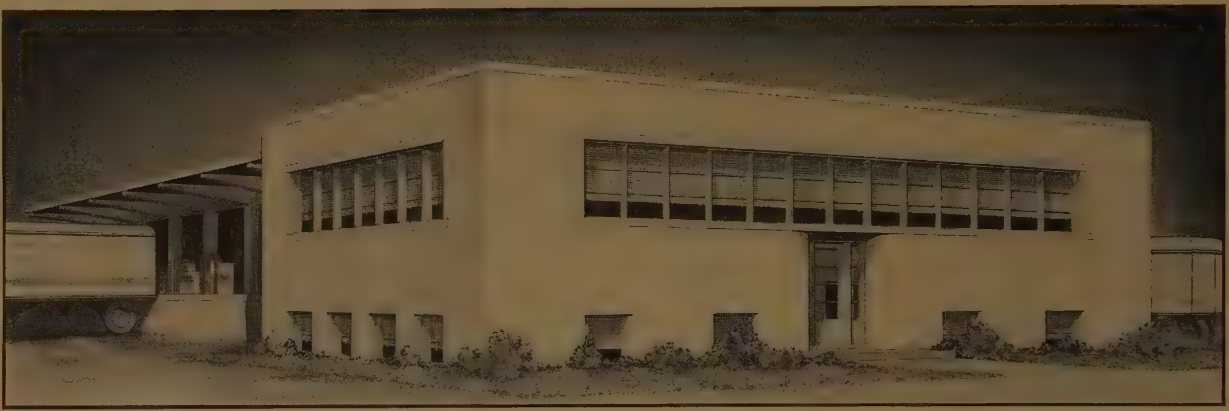


here ornamentation was desired it was done simply by adding interesting lded detail to the structural wall itself.

A general cleaning down after the walls were erected constituted the only fin treatment given exterior surfaces.

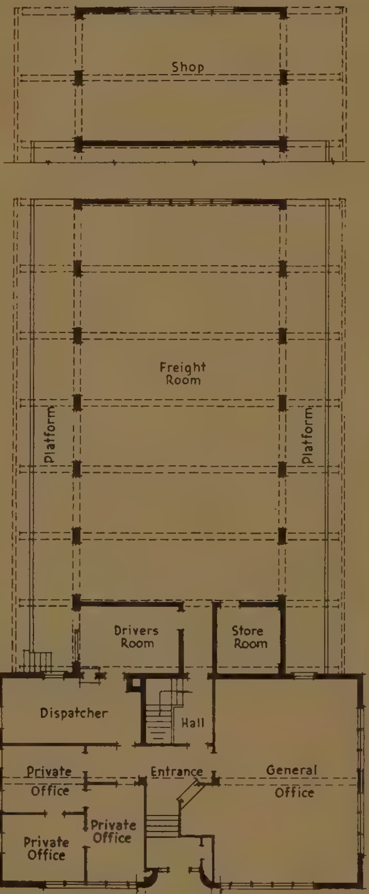


SECOND FLOOR PLAN

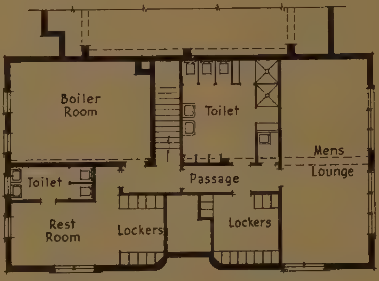


Motor Freight Terminals

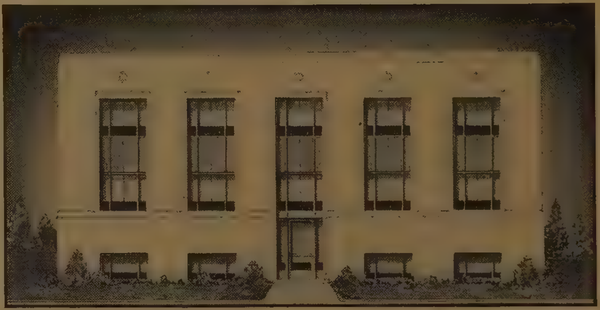
MOTOR freight terminal facilities depend upon numerous factors, including volume of business, location and method of operation. The plans shown here illustrate possible arrangements of the facilities frequently provided for terminals in metropolitan areas. The approximate relationship is shown of the space devoted to freight handling, offices, and sleeping quarters or recreation rooms for drivers. In small communities or at locations where only the transfer of freight is involved, sufficient office space for a clerk may be all that is required and sleeping quarters for the drivers are not provided. Where a shop or garage is required in connection with the terminal, it may be located at the end of the freight room by extending the building the required number of bays and placing the floor at the level of the outside grade. Suggestions for treatment of exteriors using architectural concrete are shown for one and two-story buildings.



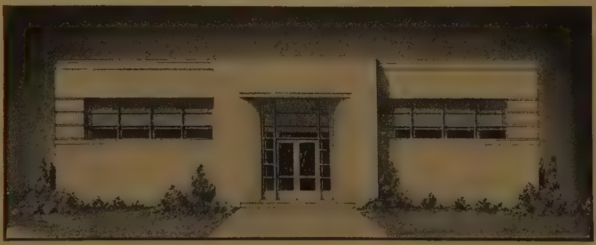
First Floor Plan



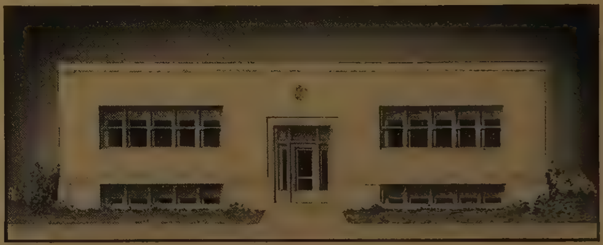
Basement Plan



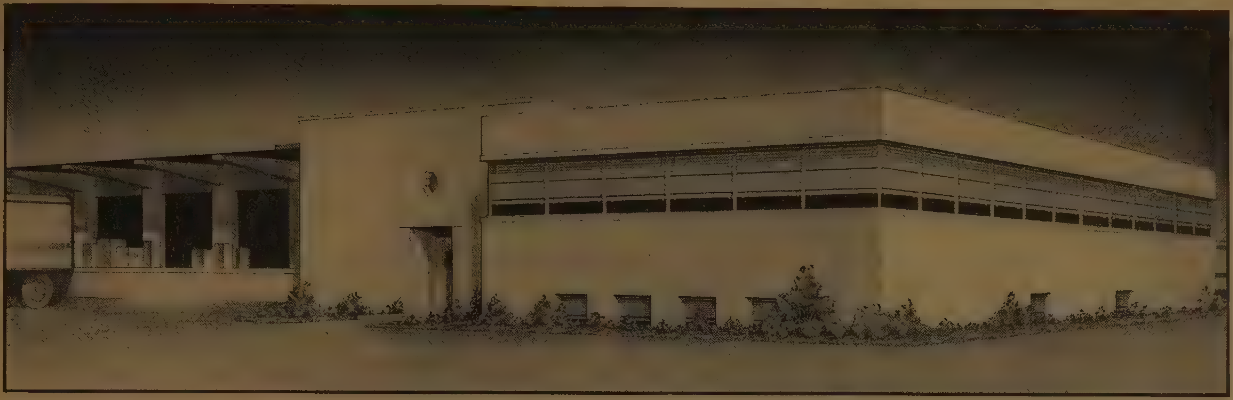
Front elevation two-story office with basement.

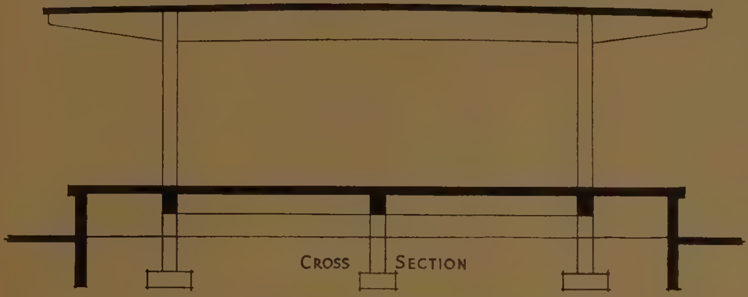


Front elevation one-story office without basement.

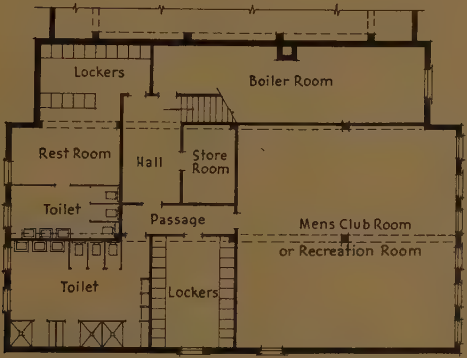


Front elevation one-story office with basement.

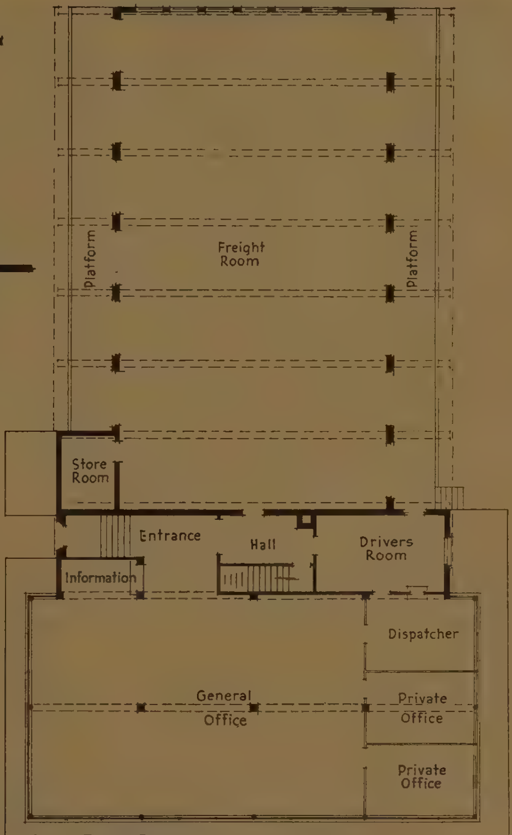




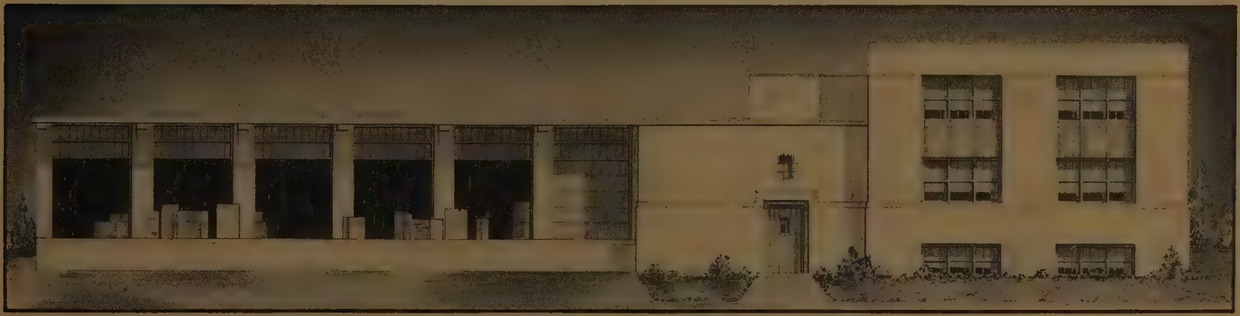
Typical cross section through freight handling room.



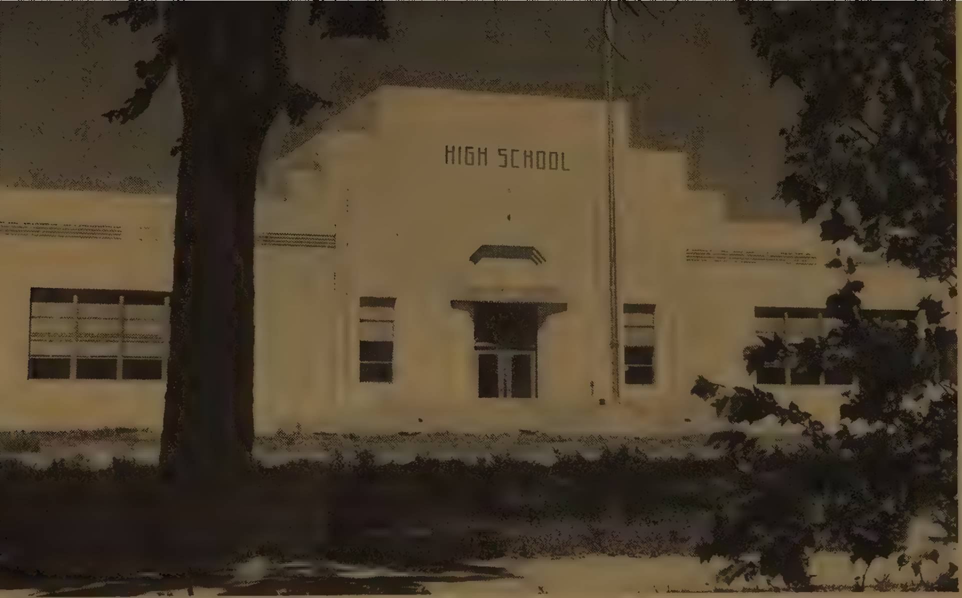
BASEMENT PLAN



FIRST FLOOR PLAN



Side elevation, terminal building with two-story and basement office.



This architectural concrete high school at Phillipsburg, Kan., is typical of modern firesafe structures being erected throughout that state. Hal Wheelock, Clay Center, Kan., was the architect; Mont J. Green, Manhattan, the contractor. Raymond Beard and John E. Malley were engineers for PWA.

School for Phillipsburg, Kansas

By Hal Wheelock*, Architect

TOO often it is the tendency of boards of education, when attacking a new building program, to make a survey of neighboring new buildings and repeat what has already been done. And average taxpayers, with a limited knowledge of the use of materials and of design, support these programs because they know of nothing better. It is very gratifying, therefore, when an architect finds a community and its board of education both in a receptive mood for the discussion of new ideas of design and modern methods of construction.

Phillipsburg is a typical, progressive Kansas town. Its people are rather independent thinkers. In planning their new high school they asked the architect to combine four principal features — utility, economy, beauty and strength. Although these four cardinal principles have mellowed with age, it was the sponsors' desire to invigorate them with new applications of their worth.

Architectural concrete was decided upon for the general treatment of the exterior because it permits many departures in style, and because the material itself has become a symbol of beauty and strength. A modern design was submitted with the feeling that in this style, beauty lies in simplicity, and that when beauty and strength are combined thus, each emphasizes the other and the result is economy.

The people voted a $70,000 bond issue and the sponsor sought a PWA grant to augment funds for the project to meet the total cost of $127,000. The contractor's bid contained the stipulation that a choice could be made between reinforced concrete or brick backed up with concrete masonry, at no difference in cost. The board of education, however,

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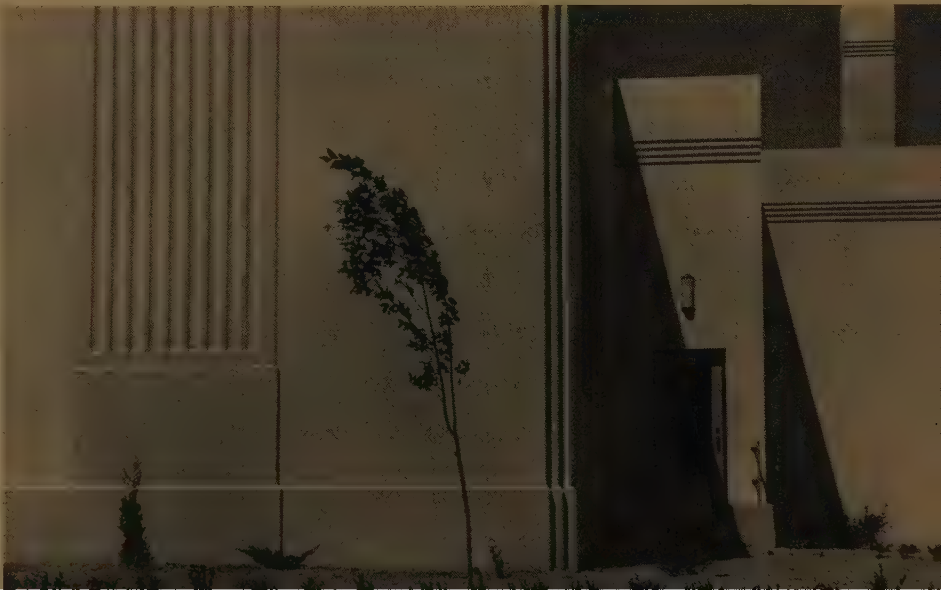
*Clay Center, Kan.



Horizontal and vertical flutings accentuate the beauty of otherwise plain exterior surfaces.

elected to use architectural concrete.

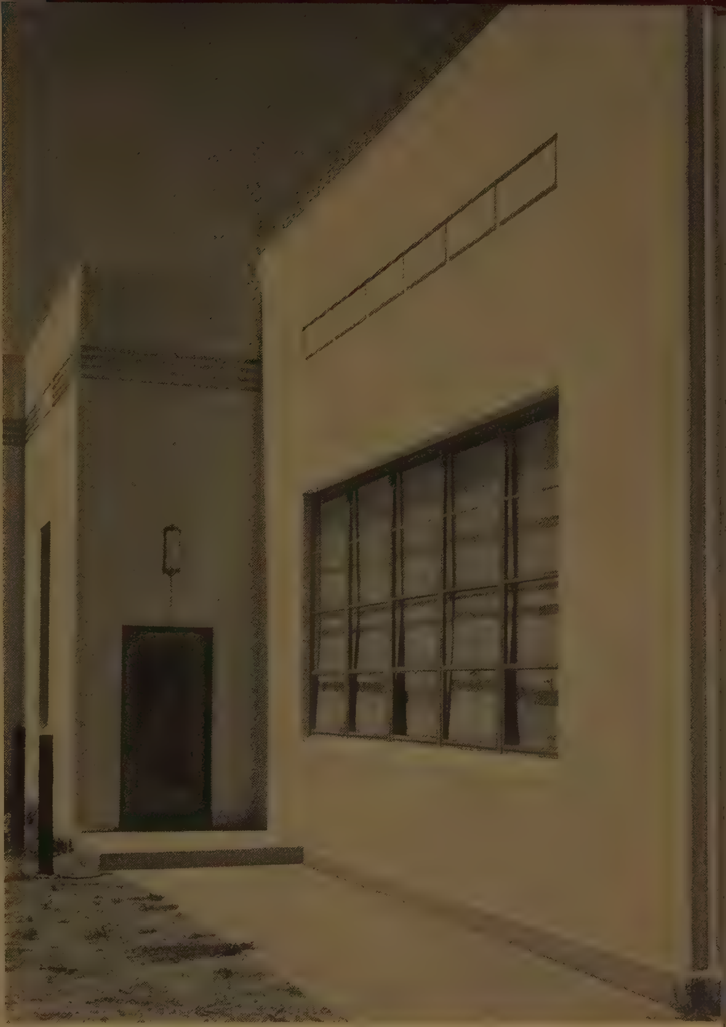
The structural development of the building produced several interesting features. The footings supporting the substructure rest on 4,000-lb. soil approximately 5 ft. below grade line. The walls of the substructure are 12 in. thick reinforced both ways and in both faces. Exterior walls above the foundation are 10 in. thick reinforced both ways with special bars around all openings. There are four expansion joints, two in the front wall on either side of the main entrance, and two in the rear wall where the auditorium joins the main building. Three horizontal lifts were made, construction joints being located at the water table, above openings and at the roof line.

The ⅝-in. plywood forms were left in place at least 4 days before removing. All right angle corners received a ¾-in. chamfer strip. The horizontal rustications and the vertical, indented flutes were formed of white pine which was carefully removed for repeat use. All the forms were thoroughly cleaned and oiled and reused at least four times.

Upon removing the forms the wall surfaces were found to need very little rubbing. The small air pockets and light form marks were accepted as a pleasing addition to the general interest of the wall texture. After the surfaces were touched up where needed, the walls were painted two coats of oyster shell white. Rustications, fluted panels and base were tinted with sand colored cement paint.

The plan of the building is not unusual although it has the distinctive advantage of accessibility from any direction. It is 241x113 ft. with five entrances, permitting two-way traffic at all times.

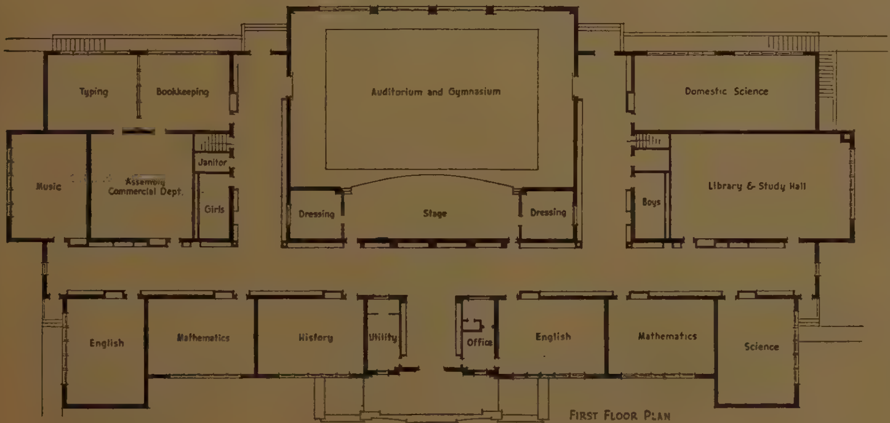
Floors are concrete with maple laid on strips in classrooms and auditorium, and with asphalt tile in corridors. Inside wall surfaces are finished with insulating plaster which has a finish coat of hard plaster. Walls are tinted in various colors with casein paint.



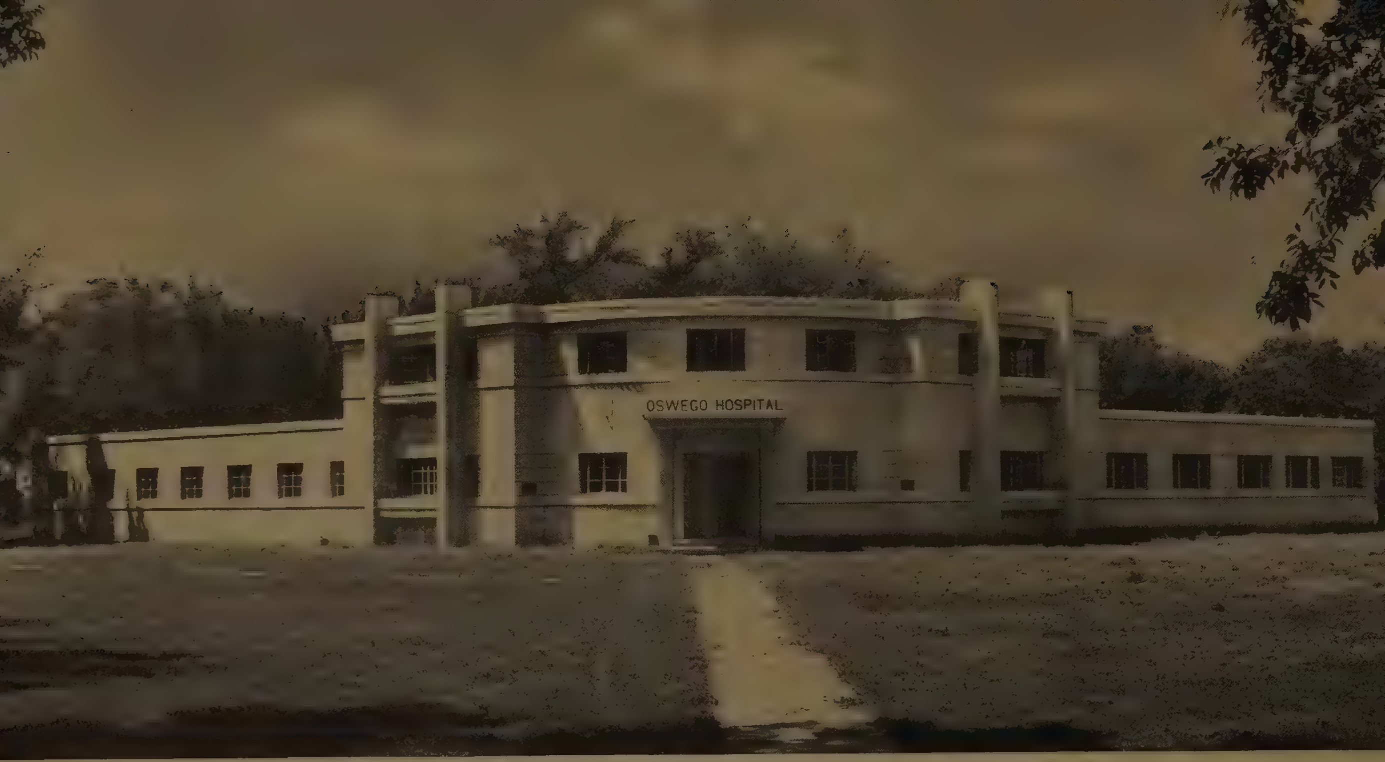
Economy without severe formality is apparent in this detail.

Perhaps the outstanding features of this building are the ease with which the material was adapted to the design, the manner in which this type of construction fits local conditions of labor and weather, and the complete satisfaction locally with the finished product. The fact that the construction details varied somewhat from the usual practice seemed to produce a spirit of keen endeavor among those associated with the work. This attitude was largely responsible for the fine workmanship obtained.

The splendid cooperation of O. D. Milligan, general construction superintendent, Raymond Beard and John E. Malley, PWA engineers, and Marion R. Larson, representative of the board of education, was most gratifying and appreciated by the architect and the contractor throughout the progress of the work.



First Floor Plan



Tornado-proof and firesafe, this is the first architectural concrete hospital in the state of Kansas. Thomas Larrick, architect of Athens, Ohio, formerly of Lawrence, Kan., designed the building.

Oswego, Kansas, Builds a Hospital

By John E. Brink*

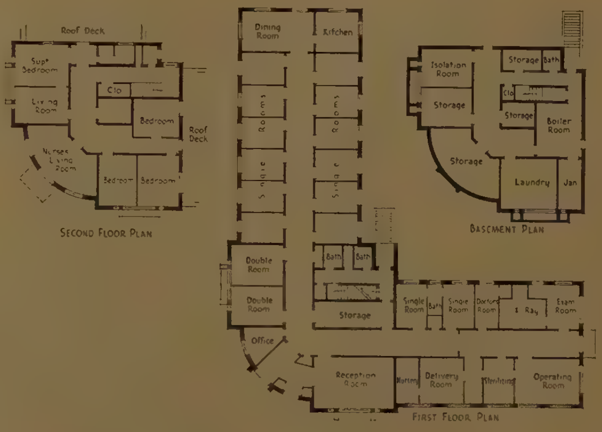
OSWEGO hospital recently completed by WPA labor is one of the most modern structures of its kind in southeast Kansas. The new building, equipped with modern mechanical facilities, replaces a structure which was burned to the ground.

The completed hospital is the first architectural concrete hospital in the state, and it is firesafe and tornado-proof.

L-shaped in plan, the building is part two stories high. One modern feature of importance is the roof decks over the one-story portions which are used as sun promenades. The building can, however, be easily converted into two stories over-all when need arises, for the ends of the corridors in the two-story central portion are walled with concrete masonry and therefore removable at any time.

A room now designated for storage has concrete floor joists bearing on structural steel angles, permitting an elevator to be installed at a later date. All walls in the building are plastered with insulating plaster, and insulation board was used on all ceilings. The roof has a 2-in. insulating fill placed on the concrete slab.

In keeping with the modern design of the exterior, full advantage was taken of the construction material to achieve



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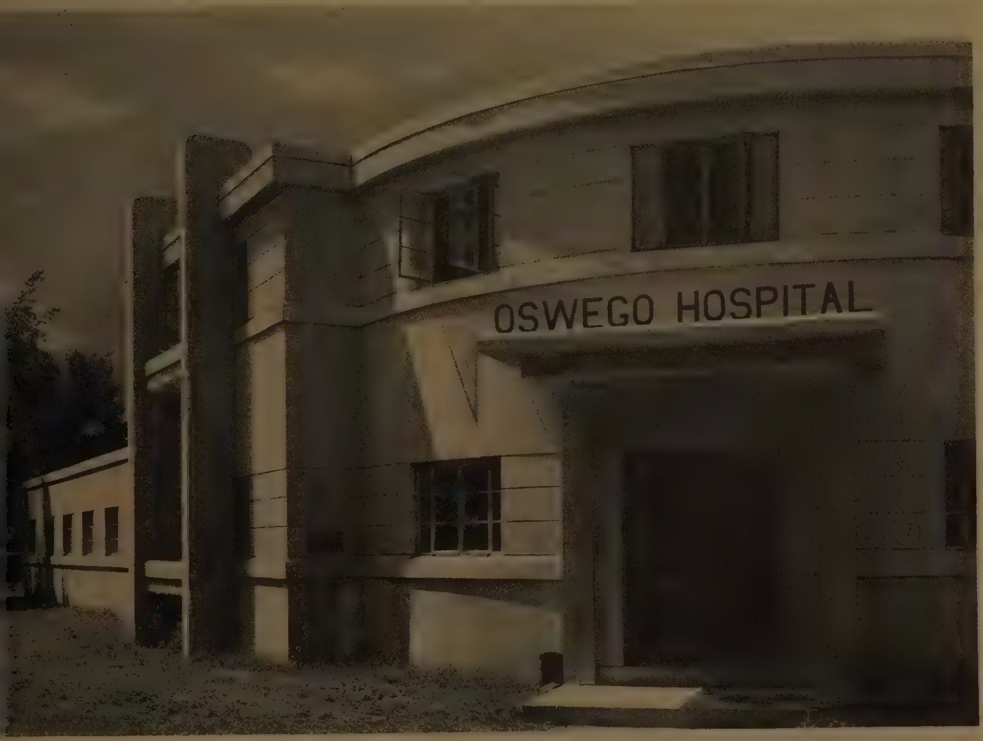
*WPA deputy administrator, Kansas.

smooth walls and the details of the curved entrance. Forming material for the walls was plywood, the same panels being reused several times in placing succeeding lifts of concrete. The concrete work above grade is almost perfect, the form builders and concrete workers contributing an excellent quality of workmanship. At the conclusion of all concrete work, the walls were thoroughly cleaned. No other treatment was used, and the building's color is rather on the light side of cement grey.

The building contains 130,000 cu.ft. and cost, without equipment, approximately 41 cents per cu.ft. Sidewalks, drives, landscaping and 12,000 cu.yd. of earth fill brought the total cost up to $64,250. The sponsor's share in this total was $24,500.

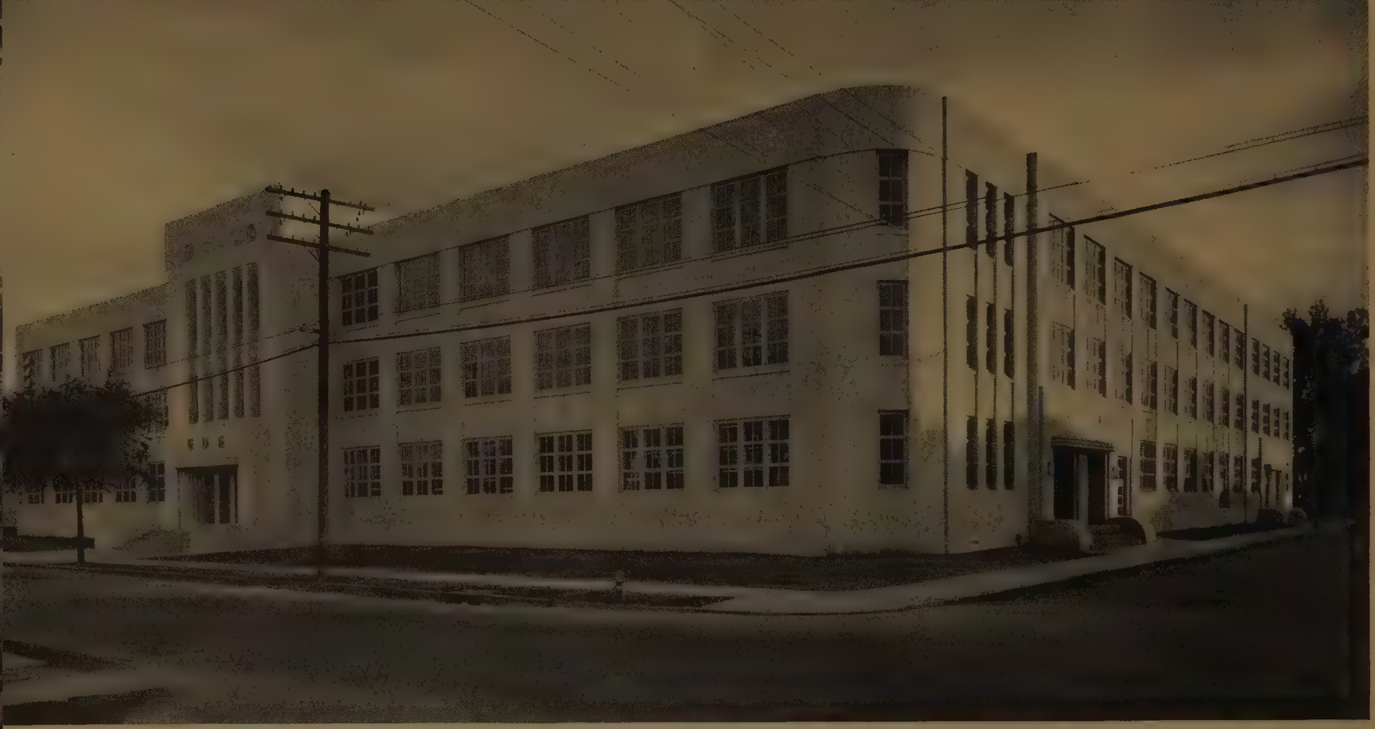
The city's share in the cost was financed through a bond issue. There is, accordingly, a community feeling of pride in the ownership of this building which promises so much in security for residents in the entire southeastern part of the state.

As a WPA project it provided employment for a number of skilled workers as well as common labor. The cooperation between these groups of men was complete and cordial. Thomas Larrick, architect of Athens, Ohio, but formerly of Lawrence, Kan., designed the building.



Full advantage was taken of the structural material in achieving the details of the curved entrance.

Though the roof decks over the one-story portions are now used as sun promenades, the building can easily be converted into two stories when need arises.



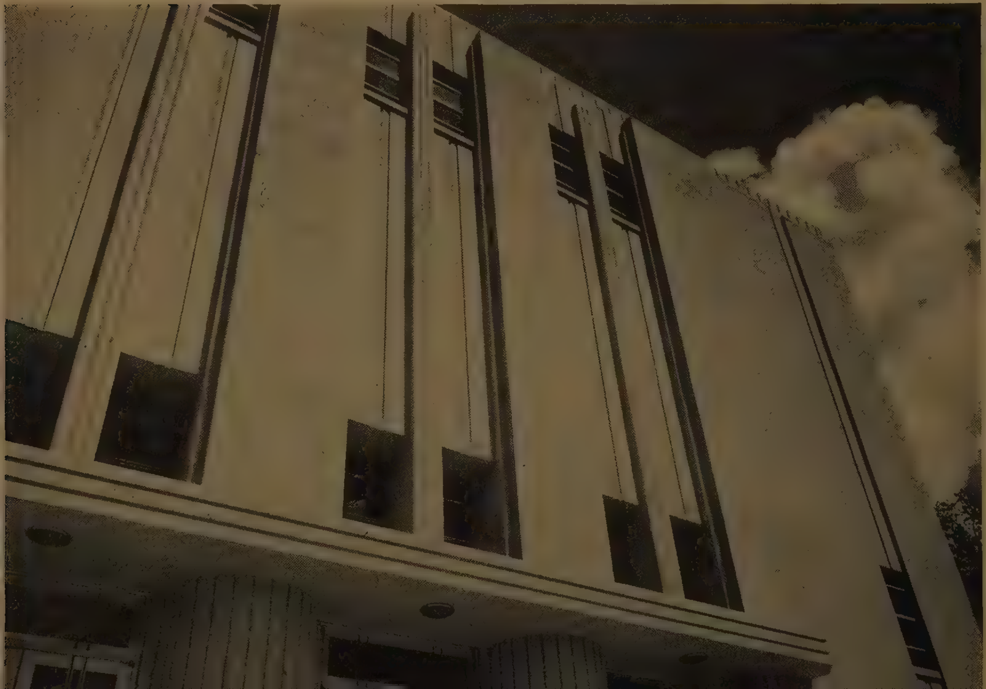
Architectural concrete greatly aided the architect, E. A. Christy, New Orleans, to complete the Francis T. Nicholls High School with maximum speed, despite obstacles. The school was built by R. P. Farnsworth & Co., New Orleans.

New School in New Orleans

By E. A. Christy, Architect*

In 1931 I designed a school which was built of reinforced concrete and faced with stucco. This was the McMain School in New Orleans, and it behaved so well through the years that I was prompted to use exposed architectural concrete for the new Francis T. Nicholls High School in 1939. The use of concrete was desirable also as a means of rapid construction, for the time allowed for erection was but 7½ months and maximum speed was needed.

As might have been expected in an emergency, when time was the essence of this contract and smooth procedure important, the weather went bad and it was necessary to place concrete under most unfavorable conditions. This created a state of worry that dissipated some of the satisfaction that might have



Fluted columns and reeded mullions and spandrels combined with well proportioned masses make an impressive auditorium entrance.

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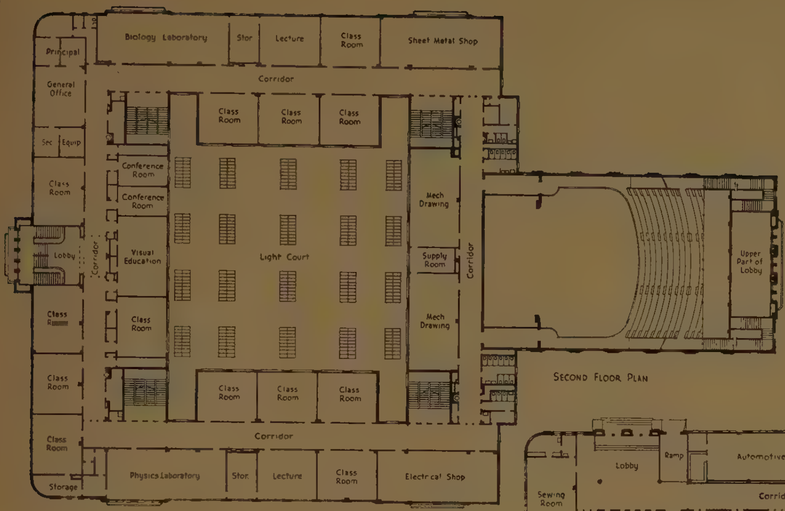
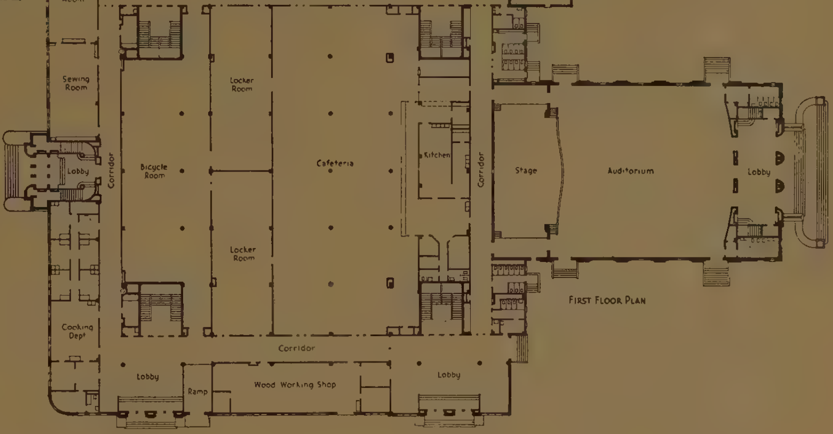
*New Orleans, La.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

been felt in the completion of a building in a new medium of construction such as architectural concrete. One feeling of triumph, however, was that the building had been completed and ready for occupancy on time despite all obstacles.

Now that the worry of finishing the job on schedule has faded into unimportance and there has been an opportunity for contemplation, much of the thrill of working in a new medium, not felt at the moment, has now been realized. Others commenting on the building have commended it both as good design and as a good job of concrete, and there can never be any question about the safety of the building from fire and storm. Aside from these other desirable qualities, the building was erected under contract at a cost of 33 cents per cu.ft., a figure which indicates a great deal of value purchased for a comparatively small sum.

As the pictures and plans indicate, the school building has a long front—226 ft.—and is 218 ft. deep from the front line back to the auditorium. The auditorium, which attaches to the rear, is 140 ft. long and opens into a street parallel with that of the main facade. The building serves a student body of 1,500 and has 44 classrooms, a cafeteria accommodating 1,000, and a seating capacity of 1,750 in the auditorium.

The concrete walls are for the most part 12 in. thick with 8-in. thick spandrels. Form sheathing for the exterior was ¾-in. plywood, except for the curved corners where ¼-in. plywood was used. These corners, as the illustrations reveal, were well executed. The plaster mold work which occurs over the main entrance is perfect. This perfection

Perfection was attained in plaster waste mold ornamentation by placing loosely-woven cloth against the mold to prevent spattering while concrete was placed below it.

Proof against fire and storm, the school was built for 33 cents per cu.ft., under contract.

is due to the method by which the molds were protected during the placing of concrete. When placing concrete into a mold there is always danger of grout spattering on the surface of the mold and drying there unnoticed. This can result in pitting or other blemishes. This spattering was the problem we sought to overcome by placing a loosely-woven cloth against the mold while concrete was placed below it. As concrete in the wall reached the mold, the cloth was gradually lifted, permitting the concrete to move against clean surfaces.

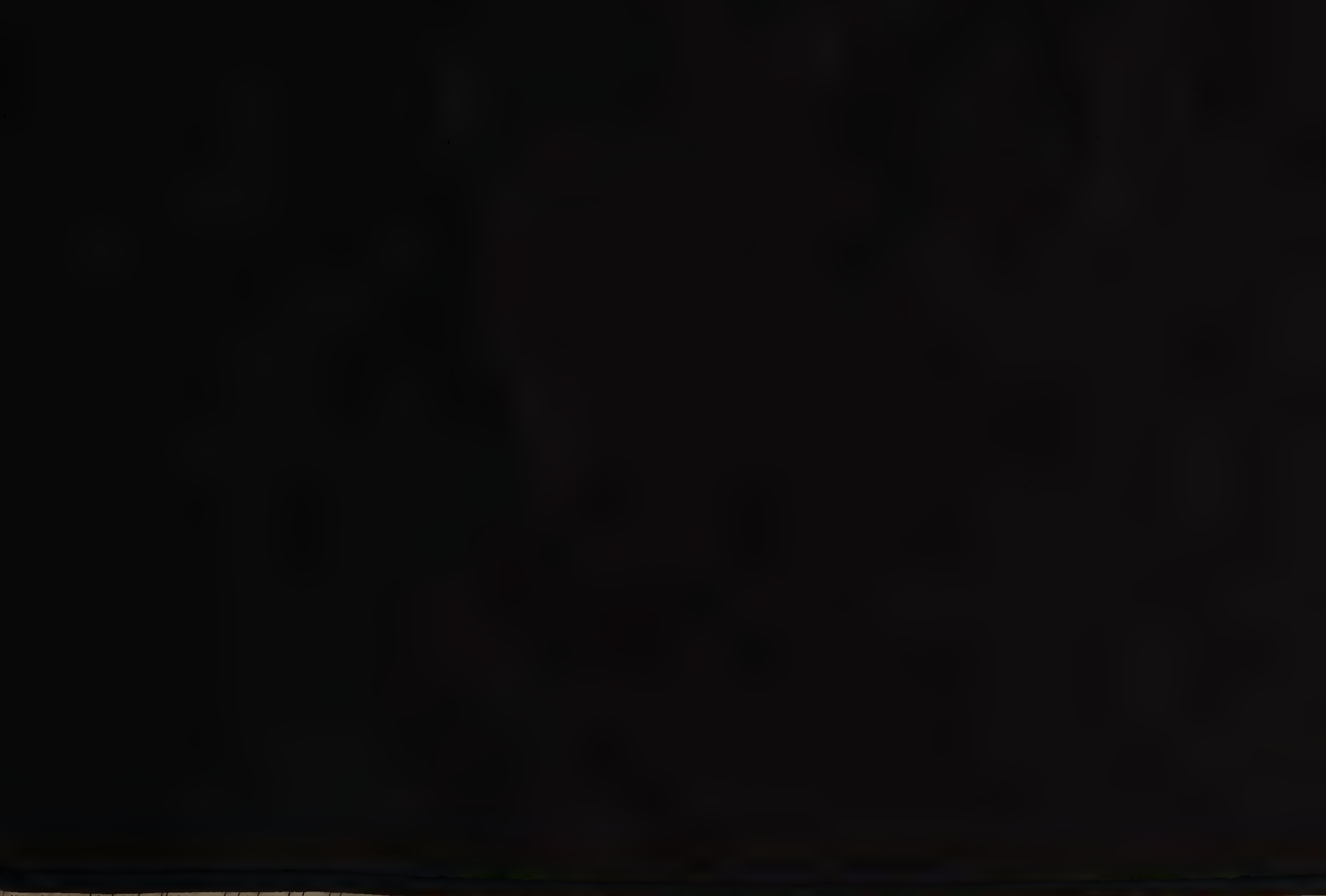
The wall footings rest on wood piles, some type of pile foundation being necessary in New Orleans where subsoil conditions are not good enough for ordinary footings. There are few expansion joints in the structure, those used occurring only in the main facade. Control joints were used, but not too effectively it seems, for in some instances the reinforcement was not severed at these locations and a closer spacing of joints would undoubtedly have been helpful.

Concrete of 3,000 p.s.i. was specified for the building, but tests showed that 3,100 lb. was developed in only 3 days, and much more at 7 and 28 days.

Floor slabs were formed in 20-in. pans. The floors are exposed concrete in some areas.

The contract price for the building was $512,000, with heating and ventilating contracts amounting to $72,000, and the electrical contract to $84,000. The total cost, as I have stated, was most reasonable; in fact cost of this school was less per unit than any other school of firesafe construction in New Orleans. The structure is very sound, the fine structural details being the work of Jens Braae Jensen, consulting engineer.

Smooth surface finish was obtained with plywood form sheathing.



lew concrete post office and federal building at Fresno, Calif., was designed by [illegible], supervising architect of the Federal Works Agency, Wash-gton, D. C. Fred A. Roemer, San Francisco, was the construction engineer; the James I. Barnes Construction Co., Santa Monica, the contractor.

Post Office for Fresno, California

By Fred A. Roemer*

THE new concrete building occupied last August by the Fresno post office and by federal courts and governmental offices of the Fresno District is a large structure. Its size, however, is due to a long and deep floor plan rather than to height, for the structure is mainly three stories and basement, with an 18-ft. penthouse occupying a small portion of the fourth floor area. The length of the building determined an architectural style which emphasizes horizontal and vertical lines, the simplicity of the masses being relieved by deep V rustications at about 3½-ft. intervals. The dominant architectural feature of the exterior is the entrance to the federal offices on M St. which rises to a height of four stories. This portion of the building contains stairways and elevators, with air-conditioning equipment in the top story, and is therefore a functional unit rather than a design device.

In keeping with the modern lines of the building, ornamental work is confined principally to entrances of which there are three: two in the main facade opening into the post office lobby and one leading to the federal offices. The post office doors, flanked by heavy concrete buttresses, are of bronze set in fluted concrete pilaster frames and capped with a heavy cornice. Above each opening is a molded American eagle. Beneath the group of close-set windows between main entrances are smooth spandrels relieved by a projected molding set in the upper center of each panel. Inscribed across the frieze, clearly outlined in projected block letters 18 in. high, are the words "United States Post Office and Court House".

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*Construction engineer, San Francisco, Calif.

At the rear the building consists of varying elevations formed by the loading platform, cantilever canopy, and low roof over the post office work room, which contains six concrete monitors. The loading platform is 14 ft. wide and 135 ft. long, with concrete driveway approaches to two streets.

Form boards specified for the exterior were 1x6 T & G, each board being required to run at a horizontal level around the entire building. Rustications varied from 3 ft. 6 in. to 3 ft. 8 in. apart. Full boards were specified between rustications, requiring specially run material for the individual horizontal panel. No cupping or warping of the boards was permitted, and no joints in the boards were allowed less than 2 ft. from any opening. These restrictions naturally required great care in form erection and in placing concrete.

An interesting structural difficulty was encountered while placing concrete. Horizontal construction joints were permitted to occur only at rustications, and vertical joints only at inside corners. Since no rustications were located at floor lines, it was necessary to erect outside wall forms one story ahead of the floor placement and to build all forms for openings and set reinforcing steel. Inside forms were erected to the sill line where rustications occurred, and hung in place. All slab steel in the section of the floor to be placed concurrently with the wall was also set in place. A sectional runway, of proper elevation for handling con-

placing was not over 2 ft. per hour. As the concrete gained sufficient set, the wall placement was continued until the top of the form was reached. During this operation a crew

Post office doors of bronze are set in fluted concrete pilaster fran and capped with a heavy cornice. Above each is a molded American eag

continually kept the concrete on the slab agitated, and when the wall lift was completed the sectional runways were removed and the floor slab completed.

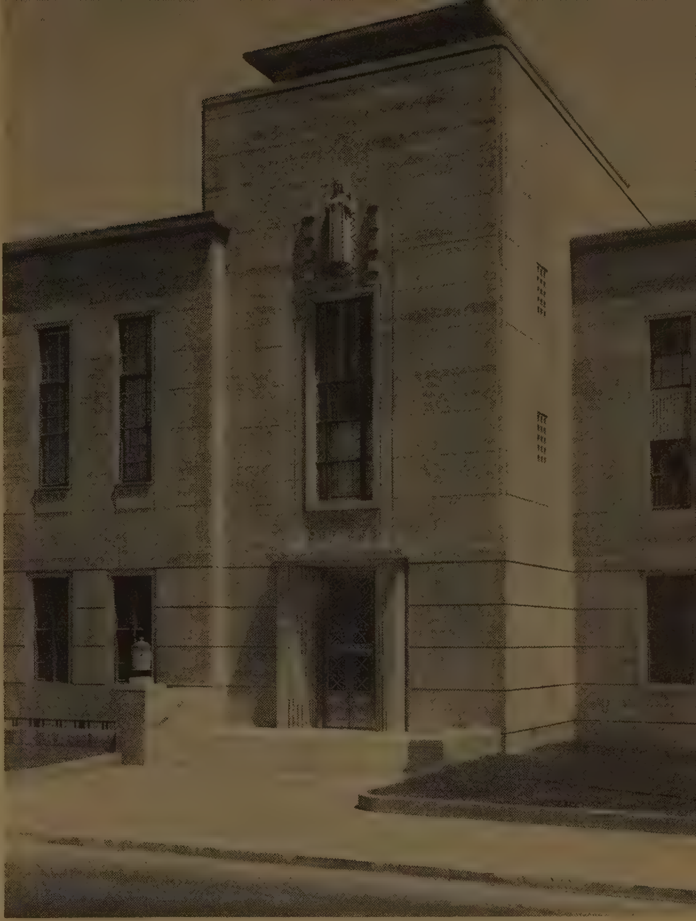
Concrete used for the walls had a slump of approximately 4½ in., while that used in the slabs had a 3½-in. slump. This worked out well, producing concrete entirely free of honeycombing, sand pockets or water streaks. At no time did free water occur on the surface of the concrete, either in wall forms or floor slabs.

The amount of added water had to be changed during placement to compensate for the varying percentages of moisture in sand and gravel. This proved rather troublesome, but through the honest cooperation of the mixer operator a uniform slump was maintained. This uniformity is attested by the texture of the concrete surfaces, which are notably free of patches, and by the fully molded and well defined arrises.

Since patching of concrete surfaces must be avoided as far as possible, every effort was made to remove the causes for patching. By using extension cords and electric lights to illuminate the inside of the forms, it was possible to see and remove blocks of wood and rubbish which are sometimes carelessly left in the forms, and to detect improperly nailed form boards and to secure them before concreting.

Concrete in the walls was placed in layers of about 12 in. deep. Tremies and elephant trunks were spaced at uniform distances. Vibrator crews followed the concrete around the walls, one group designated as the "clean-up gang" following behind to level out the lift. This procedure proved most satisfactory since it completely eliminated ragged or irregular markings in the finished surfaces. The only lines in the surfaces are the horizontal lines of the form boards.

Interior view of the federal court.

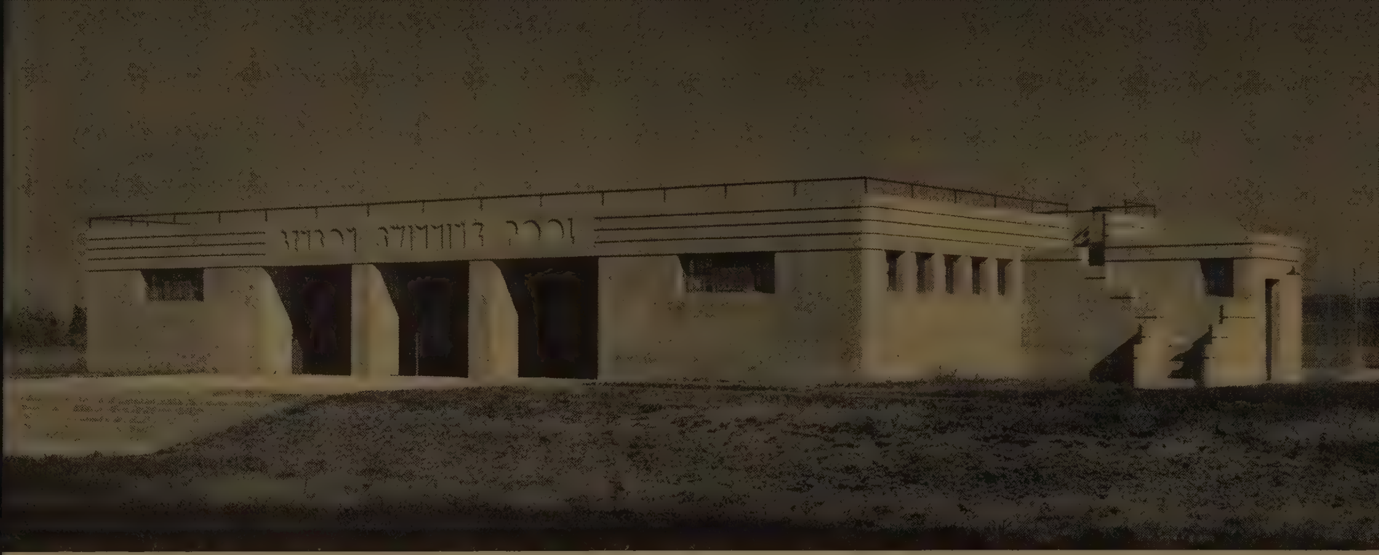


In keeping with the modern lines of the building, ornamentation is confined principally to the entrances. Surmounting the two-story window is a molded figure of Justice, 9 ft. high.

Second and third-floor slabs and the roof are of pan and joist construction. The concrete in these slabs was placed lengthwise of the joists. At the start of concreting, small amounts of concrete were vibrated along the joists ahead of the main placement, thus forming a more or less uniform pressure in the joists. Because of this procedure, there was not one instance of pan displacement during the entire operation. Internal vibrators were used on the deck slabs, but the men were not permitted to use the vibrators in the concrete of the joists. Vibrators were always laid flat and permitted to meander slightly. Slab forms were kept moist ahead of the concrete. All concrete beams were placed in the same manner as the joists, and since there were several deep beams, some as deep as 5 ft. with heavy reinforcement and closely spaced stirrups, every precaution was exercised to prevent steel displacement or warping or crowding of the forms.

All exposed concrete surfaces were finished by a wash of cement grout followed by a rubbing with burlap. This natural treatment, in view of the finely executed formwork, resulted in a most satisfactory texture and color.

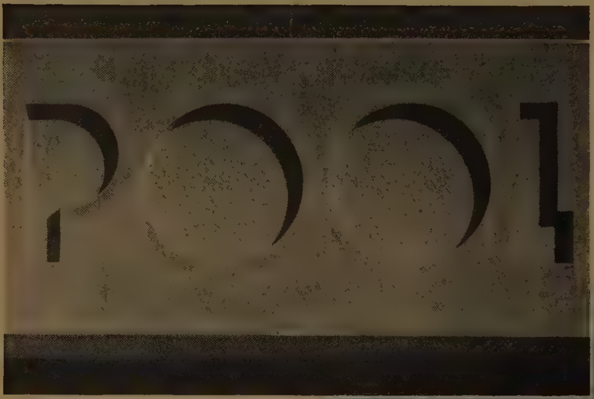
Cost of the building was $588,000.



Architectural concrete bathhouse and swimming pool in Benson, Minn. One of many architectural concrete structures designed by the author in the past few ye

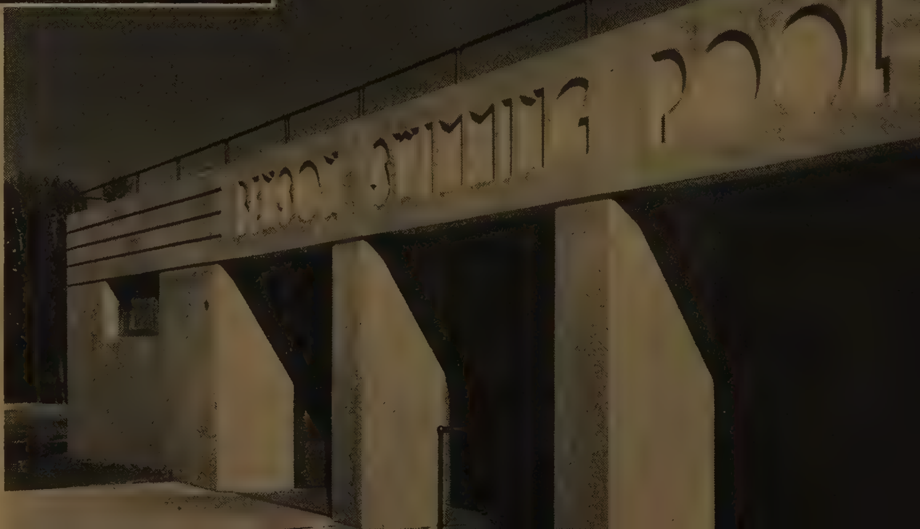
Architectural Concrete in Minnesota

By P. C. Bettenburg*, Architect



(Above) Contrasting textural effects were secured by forming the letters with wood molds, then tooling the intaglio surface to expose the aggregate.

FOR many years I have been interested in concrete, chiefly as a structural material for heavy-duty engineering projects. In more recent years I have watched with interest what has been done with it as an exposed architectural material. Now during the past five years I have found myself and my associates busily engaged in designing



Entrance detail to Benson bathhouse indicates what pleasing effects can be secured at minimum of cost.

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*St. Paul, Minn.

buildings in architectural concrete.

The first few projects, frankly, were experimental, for the work was done with WPA labor, none of which had had previous experience with concrete or with any other construction material for that matter. But for all of us it was a problem of getting started on a new type of construction material, for concrete as it is used today is not the concrete of a decade or two ago. Despite the experimental nature of our first jobs, none of them can today be considered bad for any reason at all. And that is to the credit of the material and the techniques developed for it.

At the present time we can count at least eight architectural concrete projects which have crossed over our boards and have been erected in various parts of Minnesota. From this work we have learned to respect the material for what it is—and it is definitely not a substitute for anything else. Concrete is an architectural material in its own right, and buildings to be constructed of it should be designed for concrete. It adapts best of all to mass work, but it cannot be excluded from more elaborate forms.

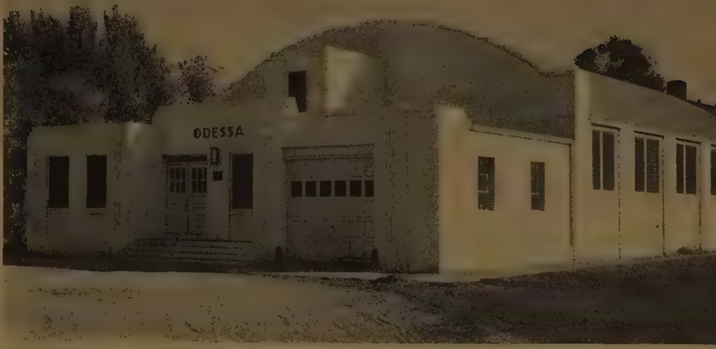
Concrete is more flexible as a design material than most others, but concrete still involves problems in design and construction that have been ironed out of practices in traditional materials through long use. For this reason study of concrete must continue, and those who study and use concrete architecturally will be amply rewarded, because it offers a glorious opportunity to try out new ideas.

In designing concrete for communities where the material has been used for little more than sidewalks, paving and foundations, we have been forced to overcome many prejudices. We found that concrete always had to be sold on the basis of economy. But in the end the finished building has always sold itself.

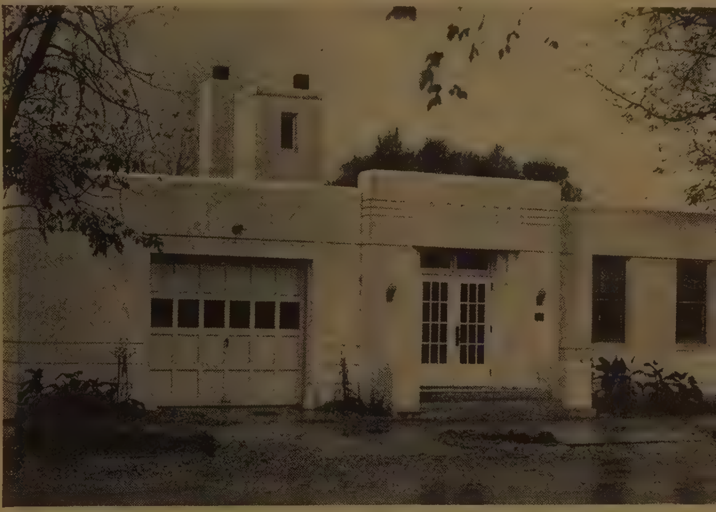
From the standpoint of the designer there is one thing concrete offers that no other material can. With concrete the architect can use the design as he visualizes it. It is the one material in which an architectural rendering can reasonably be expected to be reproduced in reality. That is naturally due to the continuity of the material itself. This is a large advantage in presenting designs for approval.

What concrete lacks to be a complete design material is more color. Development of the use of color can reasonably be expected in the future. In the meantime we shall proceed with concrete as it is, using textures and masses to produce interest. And we shall design better concrete with each new job.

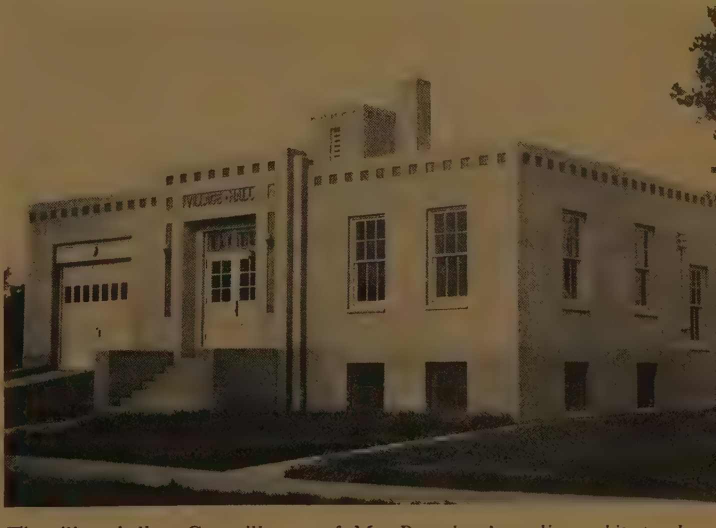
Architectural concrete, which a few years back might have been laughed out of Minnesota as an impossibility, is found today in practically every town and community. We have all come to it for economy; and now it is going its own way on its own merits.



Municipal building at Odessa is an example of how Mr. Bettenburg used concrete to achieve simple elegance at low cost.



Fire-fighting equipment is housed in a firesafe structure. This municipal building is at Walker.



The village hall at Graceville, one of Mr. Bettenburg's earlier architectural concrete designs, has been through a number of strenuous winters where the thermometer dips often below zero.

Simple in design, low in cost and with a minimum of formal embellishment, the Aberdeen, Miss., armory has become the model for other structures throughout the state. N. W. Overstreet, of Jackson, was the architect. Construction was by WPA.

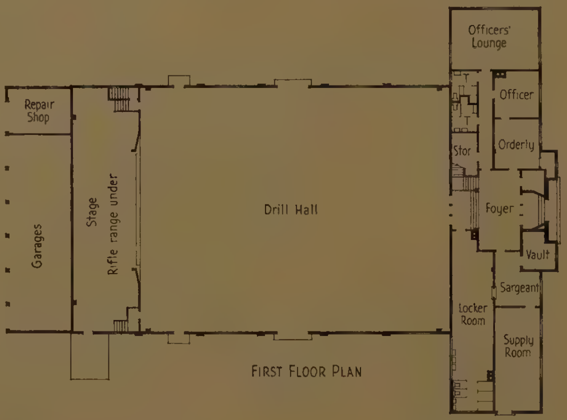
Design for Concrete Armories—Mississip

By N. W. Overstreet*, A.I.A.

THE building of National Guard armories in the state of Mississippi has been handicapped by the fact that in this state, unlike some others, the National Guard has had no source of funds for construction purposes. This problem has been partially overcome during the past few years by availability of federal funds through the Work Projects Administration. For all such projects, however, a local sponsor is necessary, and the local bodies most likely to have money, or means of raising it, for construction are cities and towns.

Fortunately for the armory program in Mississippi, cities and towns have a stake in armories beyond that of their military use. In many small towns the armory is the only community center, the only theater, gymnasium or public place of assembly. In peace time the armory is probably of more value to the public than it is to the military. For this reason many towns here, as elsewhere, have sponsored armories as community buildings, providing funds up to 40 per cent of total cost of the buildings.

Because less cost for one armory will mean more armories for the same money in the end, the adjutant general's office in Mississippi has been interested in low cost armory designs that could be duplicated throughout the state as community-sponsored projects. Aside from requiring an original design stripped of all fancy extras that could be built at reasonable cost, the National Guard thought it desirable that the construction be of a type that could be efficiently handled by WPA labor. An additional economy possible through the use of a model



FIRST FLOOR PLAN

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*Jackson, Miss.

design would be the elimination of a large portion of the design fees which must be paid by the sponsor. The idea was to make armory construction within the means of almost any community, thus inviting towns and small cities to build them for general community benefit.

In 1938 our office submitted plans for such a model armory. It was designed for concrete construction because we believe that buildings of this type offer continuous economies due to reduction in necessary maintenance. The first structure built from this plan was completed late in 1939 at Aberdeen, Miss., to house Company G, 155th Infantry, Mississippi National Guard. Since then a duplicate of it has been completed at Greenwood, and at the present time approval has been obtained for three more armories of the same design for Yazoo City, Amory and West Point.

The design provides for a fairly large structure of simple but pleasing exterior. Main portion of the building, of course, is the drill hall which is 80x100 ft. with a large stage at the end opposite the main entrance. Across the front is a part two-story office structure containing public comfort facilities as well as officers' and enlisted men's quarters. There is a rifle range and an eight-car garage built out from the stage wall of the building.

This design is flexible enough so that, without greatly altering the size and general arrangement, certain features can be changed to meet specific military uses. Some of the Guard companies are infantry, while others are artillery and tank companies, and each has different requirements for equipment storage. Thus some of the armories have basements under portions of the buildings, while others have various arrangements of garage space at the rear. In all cases, however, the general design is the same and the alterations are simple and inexpensive.

Walls of the armories are 8-in. reinforced concrete on continuous footings. Aside from using a cast stone motif over the entrance and cast stone flag pole bases at the roof line, no effort was made to decorate the structures. Interest is derived from the treatment of the masses and from the uniformity of the rubbed concrete texture.

Economy of wall treatment was also carried out to the fullest extent inside the buildings, where most of the surfaces are exposed concrete with rubbed finish. Some of the offices are plastered, but not many. In general the concrete floors are exposed, although wood floor finish is used in some of the rooms.

Here, obviously, is as modest a design as it is possible to use for the sake of economy without too much sacrifice of architectural appearance. And the cost of the buildings, varying from $47,000 to $50,000 in different communities, depending upon the amount of skilled labor available on WPA rolls, is quite low for a structure of this size. That this basic armory design meets the current need in Mississippi may be judged from its approval by the National Guard and by the number of new buildings planned for construction in communities throughout the state.

Armory for Columbia, Missouri

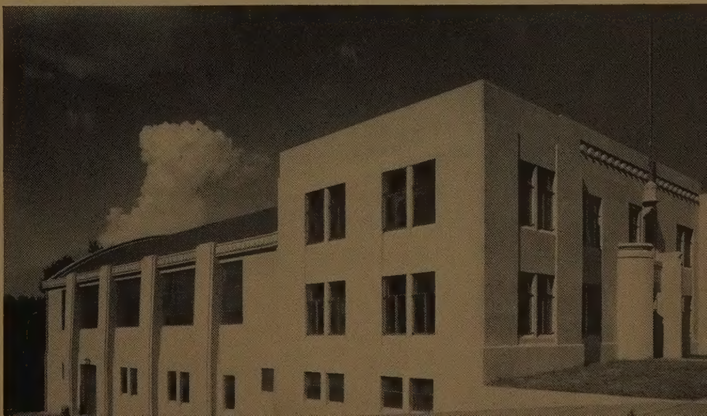
By R. B. Deering*

THE new armory at Columbia, Mo., was sponsored by the city for a share in its use as a community center. Its military function is to house the 128th Field Artillery, Missouri National Guard. The building, therefore, was designed with its dual purposes in mind, the big drill hall on the main floor serving also as an auditorium and as an athletic court.

Since the building was erected on the side of a long sloping hill, it was possible to locate regimental equipment, storage, garage space and a rifle range under the drill hall, with access directly to the street at the lower level. This arrangement permits the building to be used for public functions without greatly disturbing military activities. All offices, meeting rooms and rest rooms are located in the front portion of the building which is two stories in height.

This is the first concrete armory to be completed in the state of Missouri, but it was originally planned for brick with steel trusses. In the time that elapsed between prepa-

The site on which the armory was built permitted military equipment and trucks to be stored below the drill floor.



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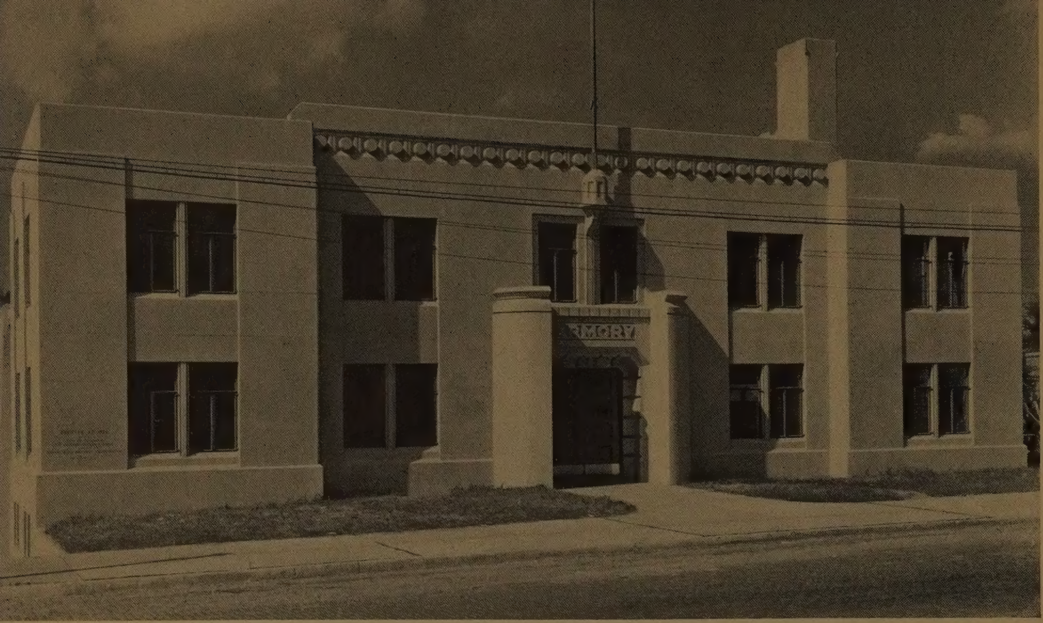
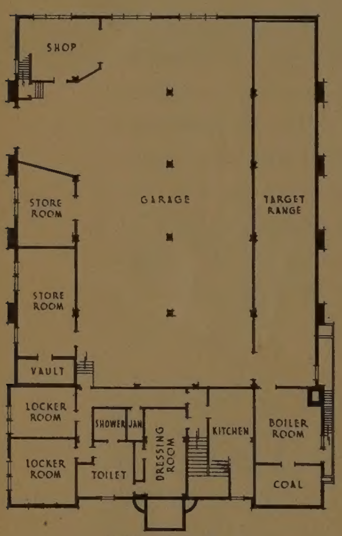
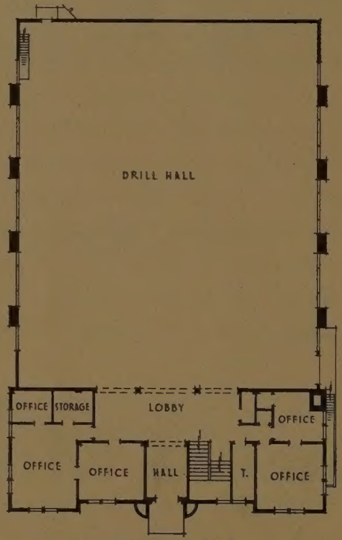
*Deering & Clark, architects, Columbia, Mo.



The Columbia, Mo., armory serves a double purpose: for military drill and as a community center. It was designed by Deering & Clark, Columbia architects. R. B. B. Moorman, of Columbia, was the structural engineer.



BASEMENT PLAN



FIRST FLOOR PLAN

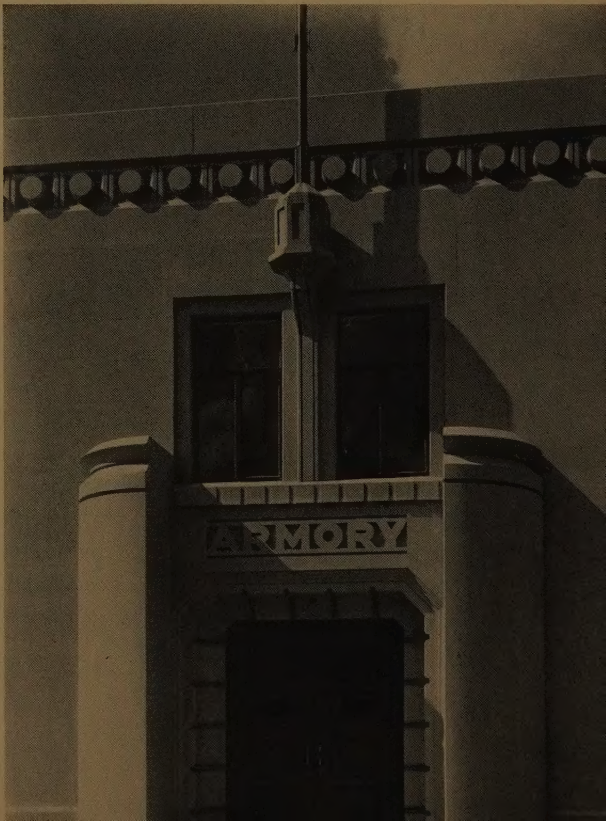
ration of original plans and start of construction, concrete was suggested as a possible solution to two problems that attended the delay in getting the project underway. One problem was to keep the cost to a minimum that could be assumed by the city; another was to adopt a method of construction that could be done economically and well by WPA labor.

At the time concrete was brought into the picture as a possible construction material, a number of concrete armories were being completed in nearby states. Several of these were WPA projects and they were being carried out under conditions similar to those that confronted us. The success of these jobs made it clear that the Columbia project could be changed to concrete with equal expectations and advantages.

Only the structural details were changed in making the building architectural concrete. The plan remained the same and the architectural features were fairly easy to detail for wood mold execution.

Forms generally were of $\frac{5}{8}$-in. plywood arranged in panels for $3\frac{1}{2}$-ft. lifts. There was no attempt to conceal construction joints, but care was given to lifting the forms so that unsightly joints would be avoided. Although these joints are visible in the facades they are even and regular and quite in character with concrete textures. Tempered Presdwood was used as forms for the curved surface of piers at either side of the entrance. Lettering and most of the other decorative details were formed against wood molds, the exception being the cylindrical members in the band course over the main

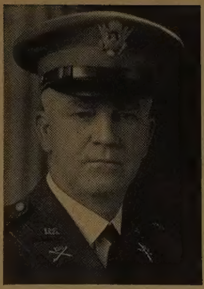
This conventionalized design above the main entrance is distinctly i military note.



"At the time specifications were made up for the Columbia armory, it was planned to build it of brick. Quite a bit of time elapsed before the building was started and during that time a study was made of armories that had been constructed for National Guard use. After this study it was decided to construct an architectural concrete armory. There were no other changes made in the original plans except the change from brick to concrete.

"The armory now stands completed. It is well constructed. It presents a pleasing appearance from the exterior and is well arranged for any use contemplated for it. The regiment is very well pleased with the armory and gratified that the change was made in the original plans."

—Lieut. Col. Charles E. Barkshire, *Commanding Officer*
128th Field Artillery, Missouri National Guard, Columbia, Mo.



entrance which were formed with metal cylinders.

We experimented with concrete mixes before preparing specifications and this proved invaluable in carrying on the job. It not only saved time during construction, but resulted in such clean surfaces from the forms that only four small areas required any patching at all. There were no sand streaks.

In finishing the exterior most of the joints were rubbed with stone to eliminate slight projections at joints. This, however, required very little work. The finish treatment was two coats of portland cement paint.

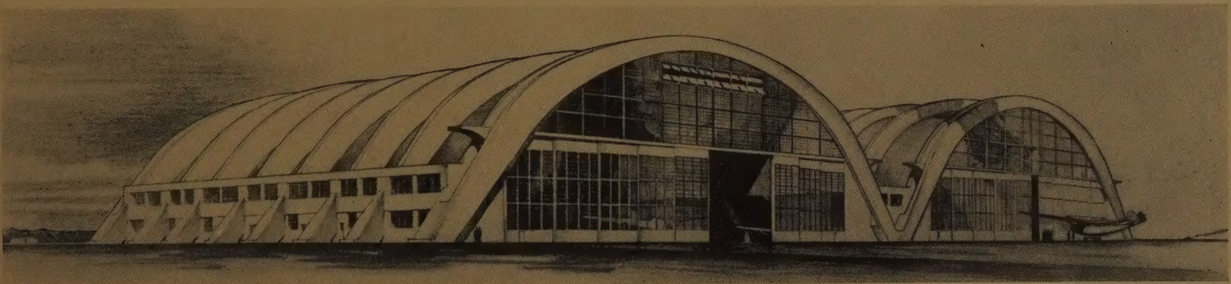
Floors throughout were formed with wood pans, the large floor of the drill hall being supported on columns and beams. These columns were arranged for minimum interference with the movement of military equipment and trucks on the lower floor.

The wood pans forming the floor construction above the lobby were covered with a low grade linoleum and the resulting smooth ribbed ceiling was left exposed and finished by painting with casein paint. Indirect trough lighting of this ceiling proved to be effective, practical and inexpensive.

The project turned out better, possibly, than we anticipated. It gave us a good first lesson in concrete as an architectural material and opened up a new world of possibilities in design. The building has also pleased its sponsors, not alone for the economy which made its erection possible but also for the appearance and usefulness.

The armory cost, including everything, about $112,000 or a cubic foot cost of 32 cents. R. B. B. Moorman, of Columbia, was structural engineer, and R. S. Dodson, was superintendent on the job for the city of Columbia. The project was built under the jurisdiction of H. P. Phelan, district director of WPA. Lloy Wisdom was the WPA supervisor on the job.

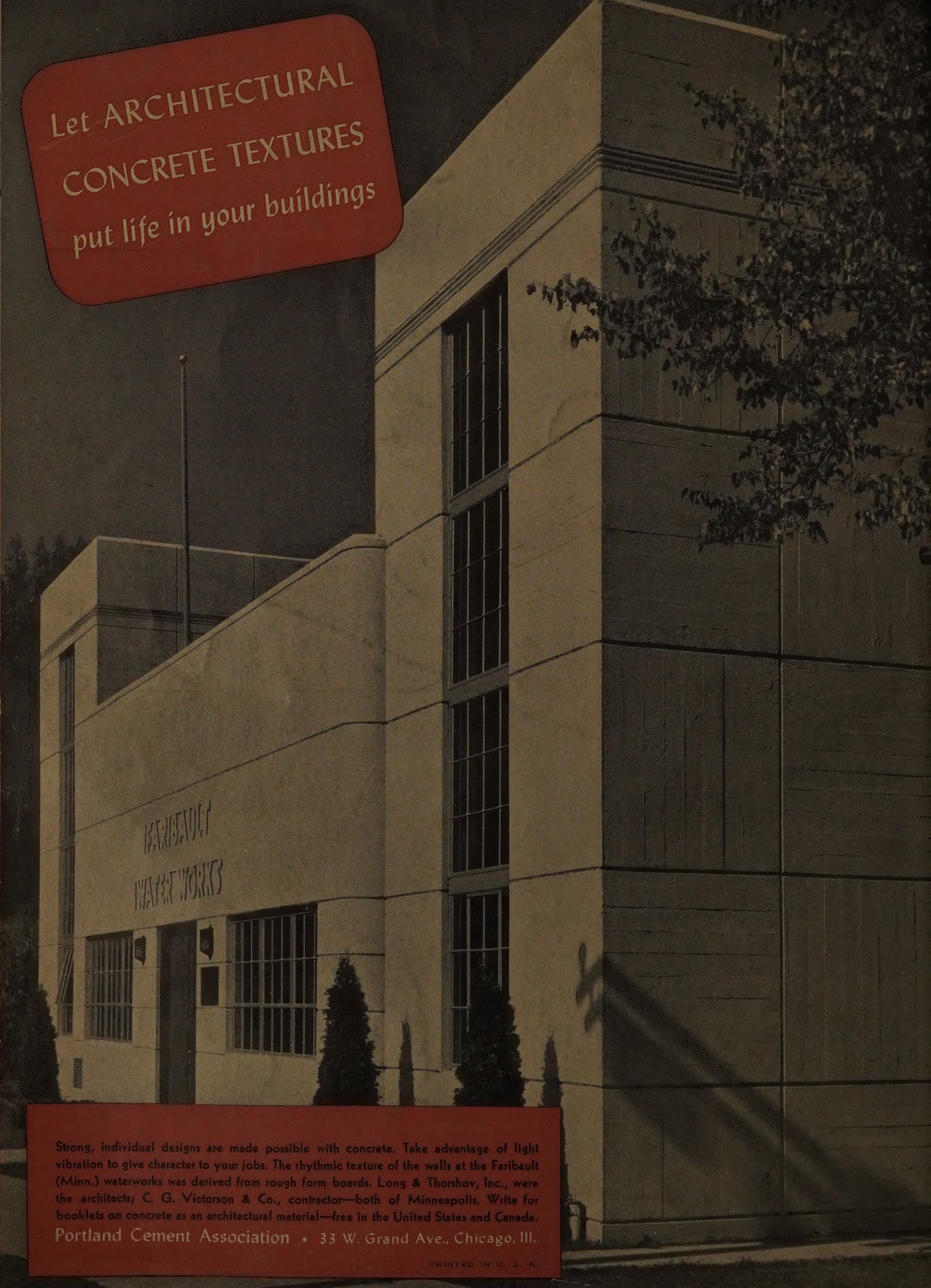
File 10-7-1 Some Designs for New Structures in ARCHITECTURAL CONCRETE



Largest reinforced concrete hangar in U. S. now under construction for Navy. It is 596 ft. wide, 240 ft. deep. Designed by Roberts & Schaefer Co., Chicago engineers; Joe Harry Lapish, consulting architect, Washington, D. C.

Enon Consolidated School, Washington Parish, La., is now under construction by WPA. It was designed by George P. Rice, structural engineer of New Orleans.

Three of six units of proposed Memphis, Tenn., armory. Walk C. Jones and Walk C. Jones, Jr., architects; Herbert M. Burnham and Lucian M. Dent, associate architects. Gardner & Howe, engineers.


Let ARCHITECTURAL CONCRETE TEXTURES put life in your buildings
FARIBAULT
WATER WORKS

Strong, individual designs are made possible with concrete. Take advantage of light vibration to give character to your jobs. The rhythmic texture of the walls at the Faribault (Minn.) waterworks was derived from rough form boards. Long & Thorshov, Inc., were the architects; C. G. Victorson & Co., contractor—both of Minneapolis. Write for booklets on concrete as an architectural material—free in the United States and Canada.

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